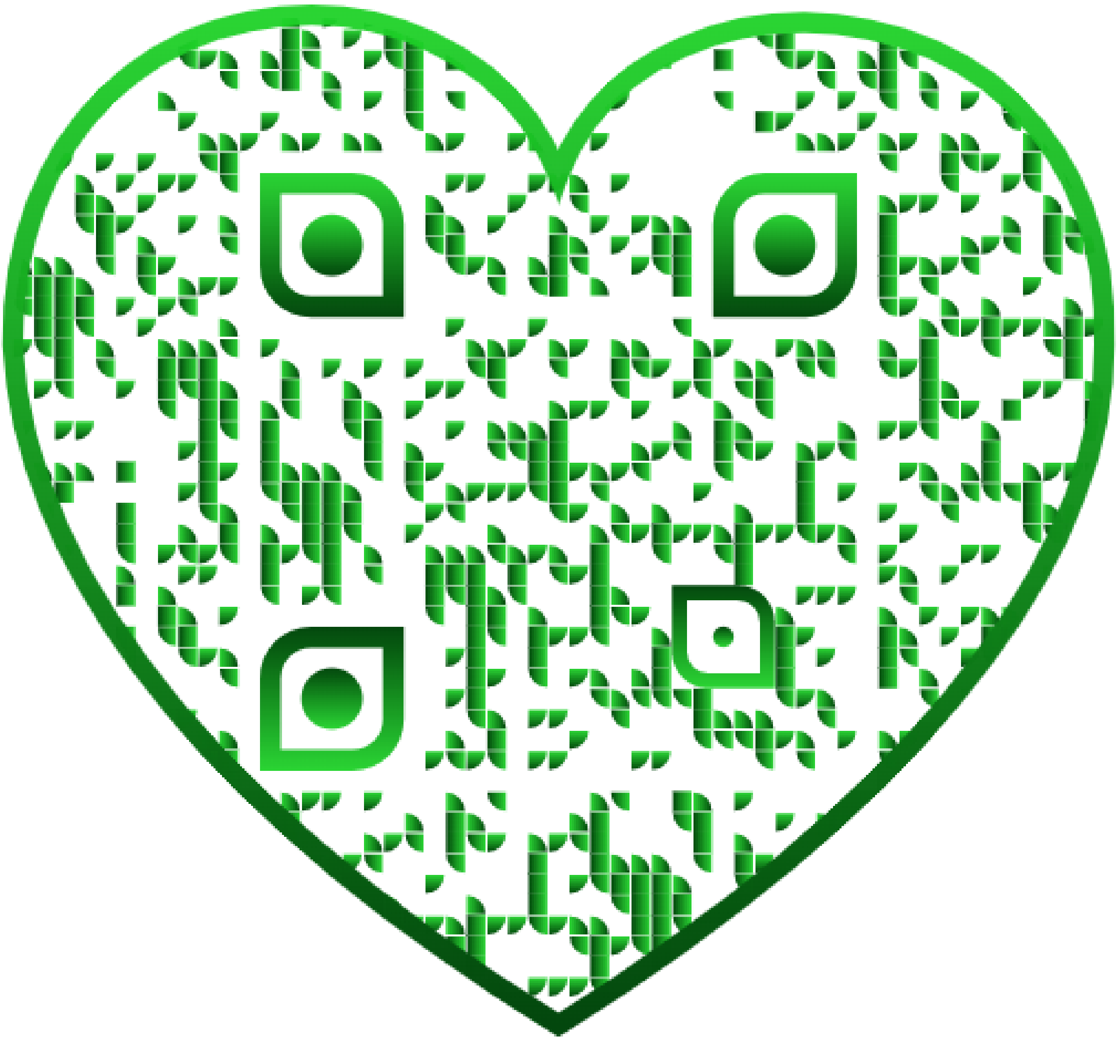
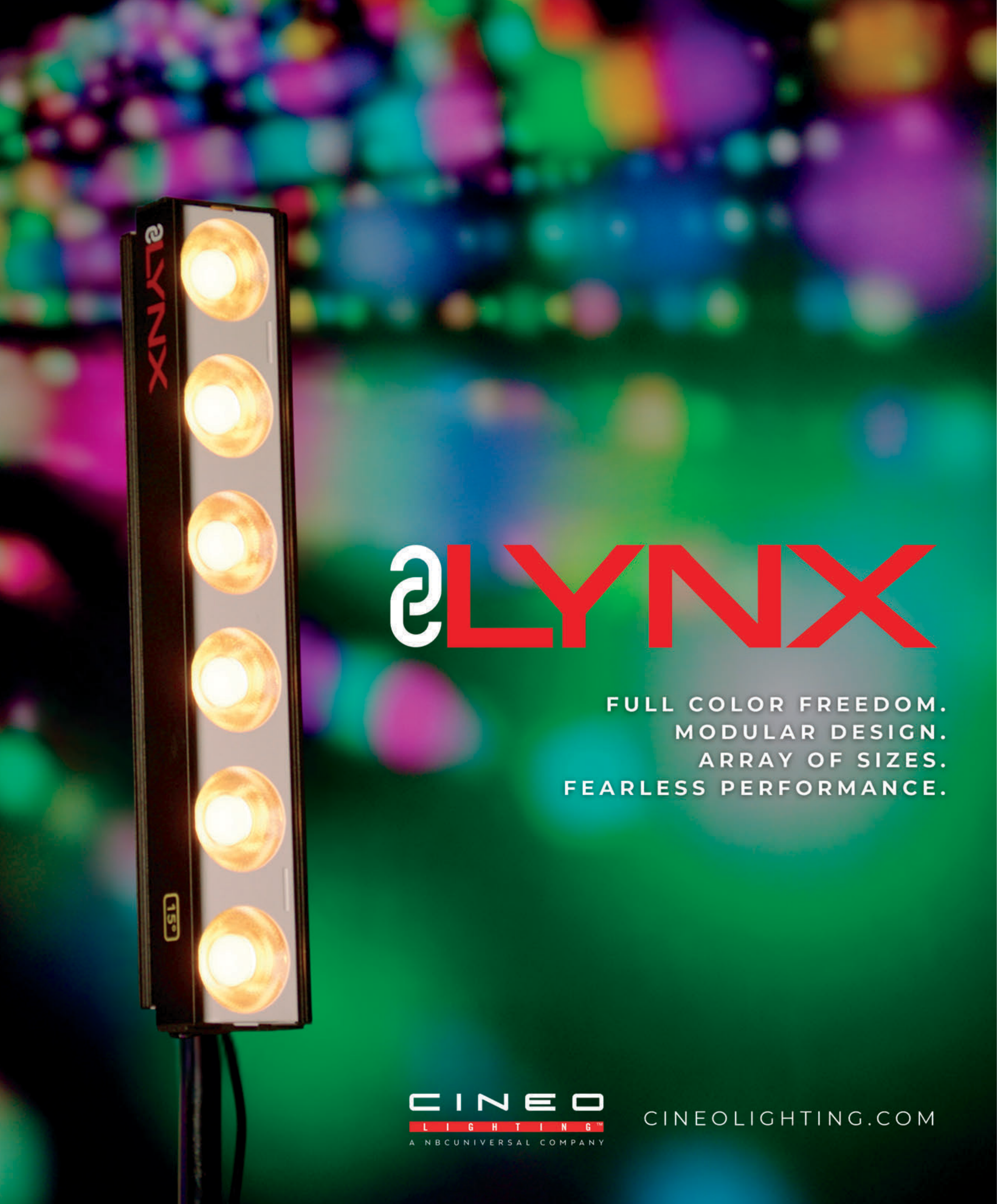
July 2025 The International Publication of the American Society of Cinematographers

American Cinematographer

Shooting the Dual Worlds of

Severance





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American Cinematographer

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Adam Scott plays Mark Scout, an office manager who leads a group of employees whose memories have been surgically divided between their work and personal lives, in *Severance*. (Image courtesy of Apple.)

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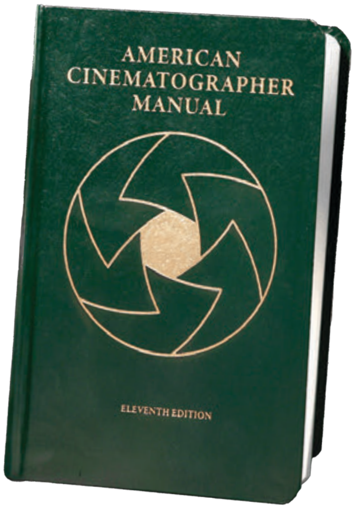

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American Cinematographer (ISSN 0002-7928), established 1920 and in its 106th year of publication, is published monthly in Hollywood by ASC Holding Corp., 1782 N. Orange Dr., Hollywood, CA 90028, U.S.A., (800) 448-0145, (323) 969-4333, Fax (323) 876-4973, direct line for subscription inquiries (323) 969-4344. Print subscription (12 issues): U.S. $49; Canada/Mexico $75; all other foreign countries $99 a year (remit international Money Order or other exchange payable in U.S. $). Advertising: Rate card upon request from Hollywood office. Copyright 2025 ASC Holding Corp. (All rights reserved.) Periodicals postage paid at Los Angeles, CA and at additional mailing offices. Printed in the USA. POSTMASTER: Send address change to American Cinematographer, P.O. Box 2230, Hollywood, CA 90078.

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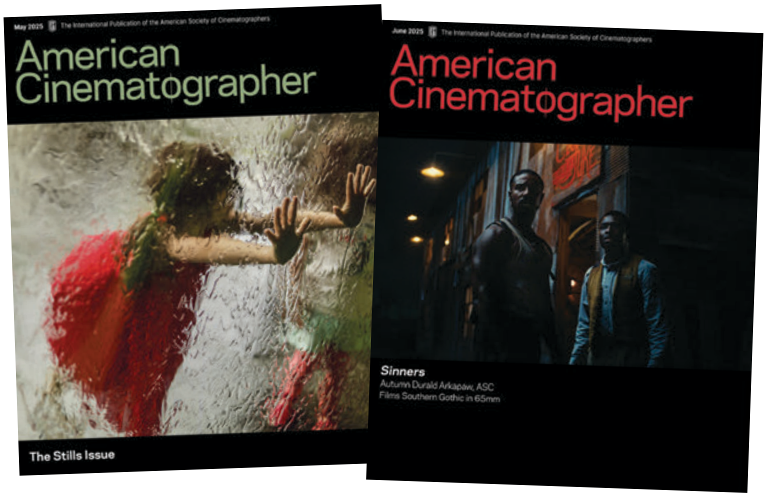
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Severance: Contrasting Minds and Worlds

The Season 2 filmmakers talk with *AC* about creating dual identities and environments for an eerie corporate dystopia.

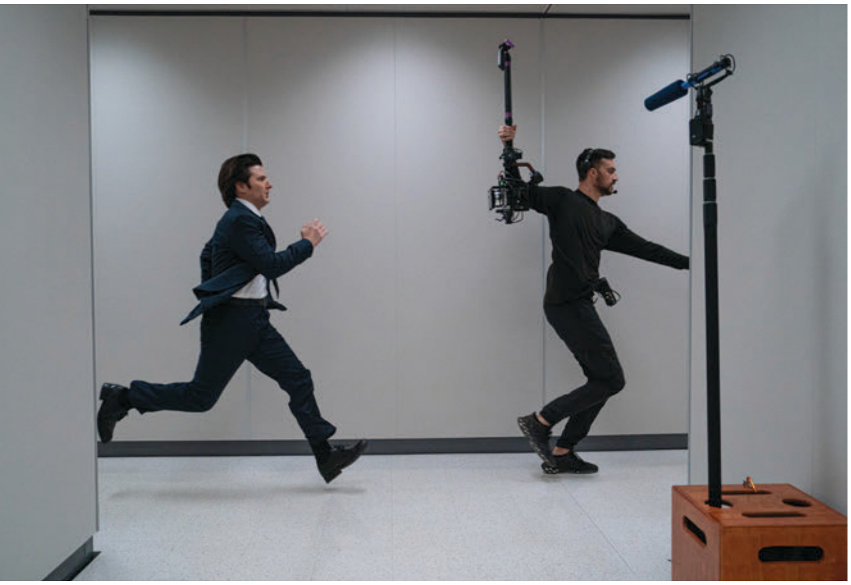
By Noah Kadner

Dan Erickson's sci-fi thriller *Severance*, which wrapped its second season earlier this year, follows workers at Lumon Industries whose minds have been surgically split — or "severed" — into two separate identities: an "innie," who knows only their office life, and an "outie," who has no idea what happens at work. Visually conveying the different worlds these fractured personalities inhabit fell to returning cinematographer Jessica Lee Gagné, who shot six of Season 2's 10-episodes, along with David Lanzenberg, ASC and Suzie Lavelle, BSC, ISC, who each shot two. Gagné worked primarily alongside director/executive producer Ben Stiller, and Lanzenberg and Lavelle worked, respectively, with directors Uta Briesewitz, ASC and Samuel Donovan, also an exec producer.

At the center of the drama on the Apple TV Plus series is Mark Scout (Adam Scott), a Lumon employee grappling with both the psychological effects of the severance procedure and a profound personal tragedy suffered by his outie identity. Also featured are Mark's severed co-workers Helly (Britt Lower), Irving (John Turturro) and Dylan (Zach Cherry) and their non-severed supervisor, Seth Milchick (Tramell Tillman). From the show's beginning, the dual nature of the narrative called for Gagné to design two distinct lighting environments: Inside Lumon, characters are framed with surveillance-like precision beneath grids of overhead LEDs emulating fluorescents, and outside, they often maneuver amid shadows and isolated pools of light and an enveloping darkness. (For more on the production's lighting, see sidebar, page 16.)

Stark Worlds

Stiller says the show's visual design was a primary consideration from the outset. "The first talks we had about it were like, 'There are the innies and the outies, so should the outie world feel different than the innie

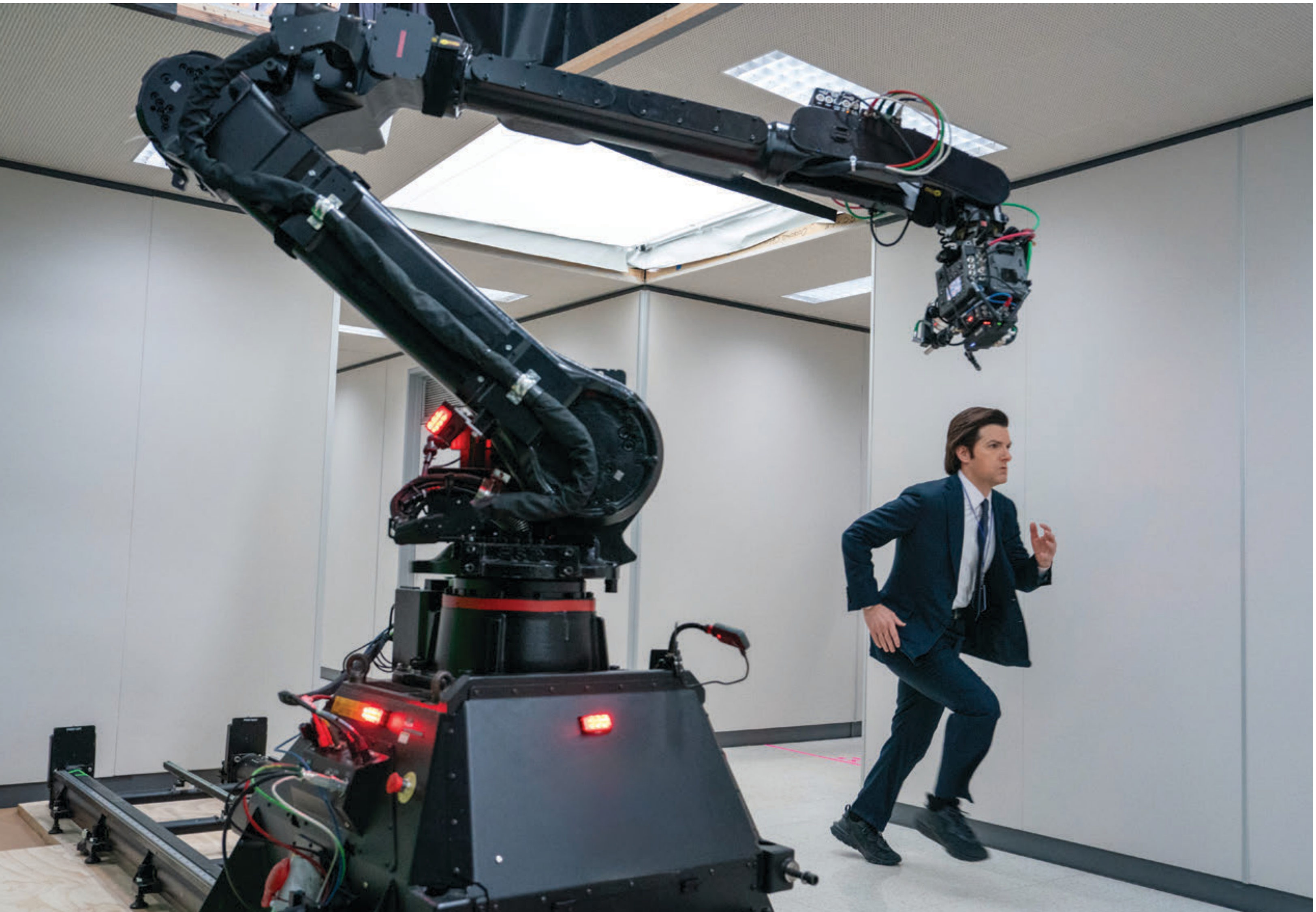


world? And what should those rules be?'" He adds that some ideas floated early on, such as limiting handheld camerawork to the outie world, were eventually softened.

Gagné, who also serves as a producer on the series, found inspiration outside of traditional sci-fi references. She recalls, "I couldn't envision the look at first, but one day, I went to a photobook fair and found *Office* by Lars Tunbjörk. I sent a picture of it to Ben and said, 'I get what the show can look like now.'" The book's portraits of stark office cubicles and the disaffected employees inhabiting them became a touchstone for the Lumon look.

As the production started coming together, Gagné and Stiller compiled an "operator watch list" — a roster of filmmakers and specific productions for the camera team to reference. "There was *Klute* and a bunch of [other] '70s anamorphic work," the cinematographer says. "I'd say things like, 'We're doing an Antonioni moment here, think *Red Desert*,' or, 'Out in the woods at night, think Tarkovsky.'" The operators' list also included such films as *The Ipcress File*, *Seconds*, *The Parallax View*, *Safe* (1995), *Punch-Drunk Love* and *The Lives of Others*. Gagné notes that the

Previous spread: Mark and Helly, as their "innie" selves, experience the completion of their project's final file. This page: This sequence in the first episode of Season 2, shot by Jessica Lee Gagné and directed by Ben Stiller, was accomplished with a combination of a Sony FX3 mounted to a DJI Ronin gimbal rig, wielded by Grgo Sevo (pictured), and a Venice 2 paired with an MRMC Bolt high-speed camera robot, operated by Dan Gottesman.



ALL IMAGES COURTESY OF APPLE.

production has "many operators who join the show on a daily and weekly basis to help out, and we try to get the regulars as familiar as possible with the language."

Gagné tested film and digital capture during prep for Season 1 and sent all footage through the show's color pipeline at Company 3. She notes, "To me, film wasn't the right texture or feel." The production chose Sony's Venice as the main camera. "It was obvious once we looked at finished footage with [colorist and ASC associate member] Tom Poole that the Venice was the look that excited us the most," she says, adding that Poole has become an important collaborator for her and Stiller.

When production ramped up for Season 2, the team transitioned to the Venice 2, which features a full-frame 8.6K sensor in contrast to the original's 6K. "For me, it was essential to maximize the sensor, and Ben asked us to up our game even more for Season 2," says Gagné. The camera's native 3,200 ISO supports the show's deep contrast ratios, shadow detail and clean imagery under low-light conditions. Though the Venice 2 also features a native 800 ISO, "we only shoot 3,200," Gagné says. "I am obsessed with pushing camera sensors to the max, and we always start here."

Stiller notes that the content of each scene dictates "how you shoot it, what the feel of it is. Sometimes you want to go with longer, tighter shots, other times a medium shot on a long lens instead of a wide lens. You want to have a consistency that feels right for the scene. That's something Jessica and I talk about, and then, after a while, you start to play around with that."

For optics, Gagné turned to Panavision's vintage C Series anamorphics. "I'd wanted to work with those lenses my whole career, but only a few people get the opportunity," she says. "It's a gift to get these lenses because they elevate your work and make things so beautiful. There is a certain vintage essence that they bring, and at the same time they don't fall apart to the point that it feels expressionistic or overly flawed. Their softness in falloff and robustness in terms of contrast illustrates the Lumon world quite well."

Above: Throughout the series, the production has used a *Vertigo*-style dolly-zoom move to emphasize the moment when severed employees transition between their two respective identities. Below: The office hallways were fitted with a few hundred LiteGear Chroma LiteRibbon and LiteCard fixtures.

Gagné paired the C Series with E Series anamorphics. "There were one or two E Series that were part of the fulltime kit. We had an E 180mm that I preferred to the C; it held up better and had closer focus capabilities."

The filmmakers designed a variety of perspectives for the Macrodata Refinement set, where many scenes take place. Bottom right, from left: 1st AC Cameron Sizemore, Stiller, dolly grip Kristin Stroh, stand-in Eric J. Carlson, dolly grip Patrick K. Donohue and camera operator Rachael Levine work on one such shot for Episode 3.

> “I always think it’s interesting to play with the frame lines, in terms of how it boxes people in, because they can’t really escape from where they are.”

ASC associate member Dan Sasaki of Panavision made some modifications, primarily on the C series, “to expand them for larger sensors and to help our closer-focus abilities,” Gagné says. “He also [modified] our 20mm H Series and 24mm Primo 70 spherical lenses to make them look softer around the edges.

Core Collaborators

The first season of *Severance* was filmed at the height of the pandemic, and the second contended with significant delays due to industry strikes. “We started in October 2022 and finished in April 2024,” Gagné says of Season 2. Principal photography stretched across 180 days, with approximately 140 of those covered by Gagné directly. “It was 40 days of two main units shooting simultaneously, and I’m not counting 2nd units. You can imagine a lot of people working together simultaneously.” Reflecting on the scale of the series, she adds, “I’ve been working on *Severance* and only *Severance* for four years of my life!”

In addition to cinematographers Lanzenberg and Lavelle and directors Briesewitz and Donovan, key collaborators included camera operator Scott Maguire and 1st AC Michael Guthrie, who helped execute the show’s precise visual language. Gaffer Kurt Lennig supervised custom LED builds and key fixtures, including Arri SkyPanels and Mole-Richardson Molebeams, and dimmer-board operator Kevin Casaletta programmed dynamic lighting cues, assisted by Tarun K. Devnani.

Office Space

Season 2 opens with Mark disoriented and on the run, sprinting down Lumon’s corridors as the camera whips around corners and pivots into close-ups, mirroring his psychological turmoil from the cliffhanger ending of Season 1. “We discussed using all the big robot systems to see which parts they could do,” says Guthrie. “We even talked about rollerblades at some point, but the turns were too tight.”

The solution was a hybrid approach involving a Sony FX3 mounted to a DJI Ronin gimbal rig paired with a 20mm H Series lens. Gagné notes, “Two other lenses were used in this sequence: the 19-90mm [T2.8] Primo Zoom on the first part and then the 40mm C Series for the end of the shot. The gimbal [was used with] the FX3, and the rest of the sequence is the Venice.” A Mark Roberts Motion Control Bolt high-speed camera robot, operated by Dan Gottesman, maneuvered the Venice for certain parts of the shot. “We brought the Bolt arm, along with track, into some of the hallway sets by removing walls and different structures,” Gagné adds. “We also had some work on the Bolt where Adam ran on a treadmill and the entire environment was re-created by the VFX team. We broke the shot into pieces that were physically possible to achieve with different tools,” Gagné explains. “Mike’s gimbal solution saved the show a lot of money.”

To illustrate the periodic signature moment when a Lumon employee shifts from outie to innie — or vice versa — within the company elevator, the filmmakers deploy a classic *Vertigo*-style dolly/zoom, which compresses the background while the actor remains fixed in frame, distorting the perspective and their facial features. These shots were accomplished using a Kuper Controls motion-control system coupled with a Preston MDR-2 controller programmed to adjust the zoom/focus in real time based on distance data from a skate sensor mounted to the dolly track. Motion-control operator Anthony Jacques developed an algorithm to map the zoom size to the dolly's position with the Primo 19-90mm, operated within the 19-30mm range. "We chose a spherical zoom because of the limitations with minimum focus on anamorphic zoom lenses," Gagné says. "Using a diopter wouldn't have been an option for us because we pull out too far away for the shot."

The lighting in Lumon's endless hallways defines the series' visual identity. Gagné, working with Lennig and Casaletta, developed an integrated system of custom LED fixtures visible in the ceilings, allowing real-time control of brightness and color.

Gagné observes, "The hallways are such an important part of the show. Some hallway-lighting cues can take months to refine, and we also test them to confirm photosensitive-epilepsy compliance. We often have to go back to the drawing board, since a lot of our looks for emergency lighting don't pass the test."

Regarding the space in which the innie protagonists perform their mysterious, repetitive office work, Stiller notes, "When you're shooting on the same set a lot, which we do on the show, like in the MDR [Macrodata Refinement] office, where it's just basically a cubicle and four walls and a lot of open space, you always want it to make sense for the scene — but part of what [we're also portraying] is that these people are stuck in this place that they can't get out of. So, I always think it's interesting to play with the frame lines, in terms of how it boxes people in, because they can't really escape from where they are."

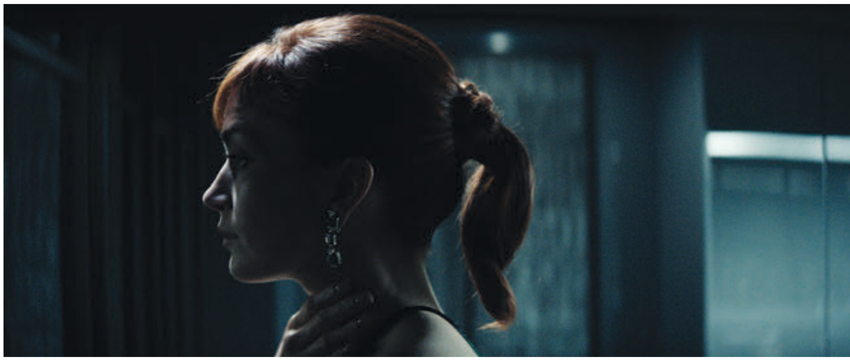
Expanding the Scope

Though much of *Severance*'s visual language is rooted in the claustrophobic interiors of Lumon, Season 2 widened the scope. One such standout is a complex nighttime drone shot in Episode 2, "Goodbye, Mrs. Selvig," that follows Helena, Helly's outie, as she walks toward Lumon's upper offices. The wide shot was captured from outside the glass-walled building, tracking actor Lower as she walks through the hall to her destination.

Lavelle, who shot the episode, explains, "We had to rehearse it a lot because it was difficult for the drone to stay steady with all the windy updrafts off the building. It was also a challenge for Britt, because she disappears out of the shot momentarily and has to kick off her shoes and run to reappear on the other side. She was amazing."

For Milchick's nighttime arrival at Dylan's house on a motorcycle in the same episode, Lavelle leaned into motivated sources and near-total darkness punctuated by LED lamps — each set to 6,500K for consistency — placed sparingly into fixtures on the otherwise barren streets of Middletown, New Jersey. "We also built a tungsten-source headlight that I could control for Milchick's bike; we had a handheld version with diffusion, and as we approached Dylan opening his door, we pushed it into his face as if the motorcycle was approaching. He doesn't know what's happening, and then this light's coming right at him."

In Episode 6, "Attila," Milchick retreats into a supply closet after receiving a humiliating performance review from Mr. Drummond (Ólafur Darri Ólafsson) and attempts to self-correct his verbose speech patterns. He delivers a monologue to his reflection in a mirror, an effect achieved via a practical trick: The "mirror" is, in fact, a square, framed hole in the wall, and his reflection is performed by the actual Tillman — looking through the hole, toward camera — while the figure who gazes into the mirror, shot from behind, is a body double who performs in synchronicity with Tillman.



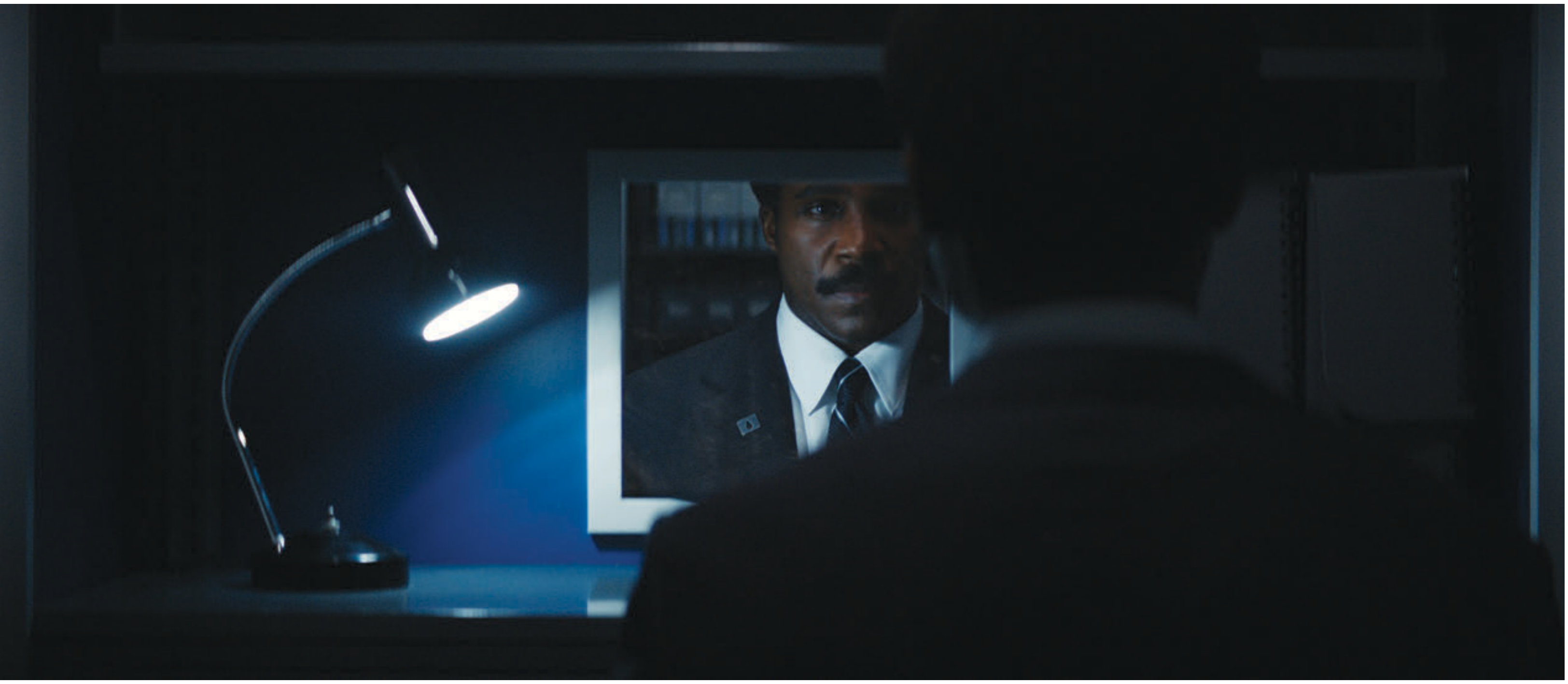
For Episode 2, Suzie Lavelle, BSC, ISC — who shot alongside director Samuel Donovan — explains that the crew used a drone to capture a wide shot of Helena (Helly's "outie" consciousness) as she walks through a long glass hallway.

"David said, 'Why don't we do it like this?' and showed me a clip from *La Haine* [shot by Pierre Aïm, AFC] with Vincent Cassel," Briesewitz recalls.

To execute the effect, the team built a mirrored version of the supply room, in which the body double was positioned to mimic Tillman's performance. "On the camera/body-double side, all the office labeling was prepped and flipped, and on the Tillman side it was kept normal," Lanzenberg says. "We then flipped/reversed the image in post, so Tillman's reflection side would be reversed as it would be in a mirror, and the body-double side would be normal as it would be if one was looking at any written labels on this side of the mirror."

As the scene intensifies, Milchick's eyeline shifts directly to the camera lens. To believably accomplish this, Briesewitz explains, "There has to be a moment where Milchick, who is locked into eye contact with his double at the beginning, completely takes his [gaze] off the mirror and looks down, so the camera can take the position of his double. Once that happens, Milchick can look back up again and look straight into the camera lens. We need to be able to hide this shift in eyeline so as not to reveal that his reflection is not real. It was a great idea from David to use this kind of trick shot because it throws you off for a second within this weird world."

Lanzenberg adds, "The reason for going through all this trouble is to not have the camera reflection in the mirror. If one were to do it for real, and also get a direct eyeline to camera at the end of that very scene,



one could VFX-erase the camera reflection in the mirror — but what's the fun in doing that?"

Later in that same episode, a scene shot on location at the Gerald Luss House in Ossining, New York, which features a dinner between Burt (Christopher Walken), Irving and Fields (John Noble), was designed to feel intimate and unadorned. The scene also conceals a sinister subtext by silhouetting Walken against a roaring fireplace, which wasn't in the initial layout for the location. "Originally, the layout plan suggested we have the dinner table close to the large window," Briesewitz recalls. "That would have caused us to pick up camera reflections in the glass when shooting the scene, [because] it would be pitch black outside. I suggested we move the table closer to the fireplace, since it also allowed me to place Burt's character in front of the flames, which evoked an image that worked for me and for his character in this scene."

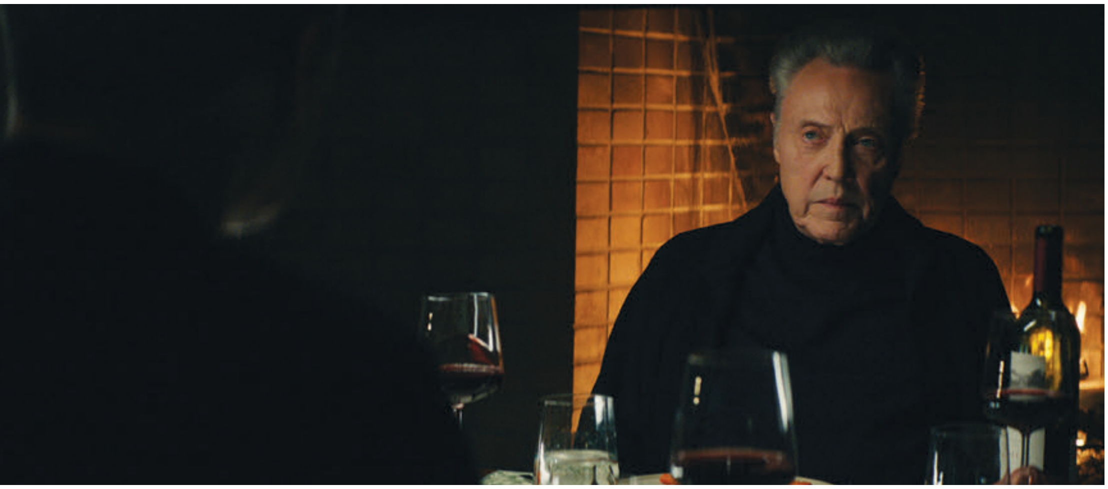
The staging allowed Burt and Irving (whose innies have shared an intimate relationship) to sit directly across from each other, with Fields offset. "They could really connect and still look at each other without having to move their heads, except to turn to Fields — and his presence, therefore, would read as a physical interruption," Briesewitz says.

Lanzenberg embraced a minimalist approach in lighting the scene, relying mainly on a textured, cylindrical ceiling fixture and hidden LED strips.

"We tested the fixture prior to shooting," he says. "Inside, we had three or four [Astera] Nyxes along with an LED strip at the very bottom, running the length of the cylinder, pushing light downward onto the dinner table. The LED strip was hidden within the 'fold' of the lamp's horsehair-fabric design. The practical had a slight warmth [from] the material. That was our main key light for our actors, along with some low-profile Astera tubes [on the table] to lift the eyes slightly for the close-ups."

Helming an Episode

Episode 7, "Chikhai Bardo," marked Gagné's directorial debut, offering her the opportunity to guide both the camera and the performance through a particularly emotional hour. The episode explores Mark's outie past with his late wife, Gemma, and the grief surrounding their inability to conceive a child. "I really wanted to [direct] that episode," Gagné says. "I would be world-building — one of the most attractive things to do, in my opinion."



Top: The self-chastisement of Mr. Milchick (Tramell Tillman) before his "reflection" featured a practical effect created with the aid of a mirror-image set, a hole in the wall, a body double, and a "flip" of the image in post. Above: Burt (Christopher Walken) is silhouetted against a roaring fireplace during a dinner. Both scenes appear in Episode 6, shot by cinematographer David Lanzenberg, ASC with director Uta Briesewitz, ASC.

Behind the scenes and screengrabs from “Tonight We Ride,” with Director of Photography Matt Sakatani Roe.

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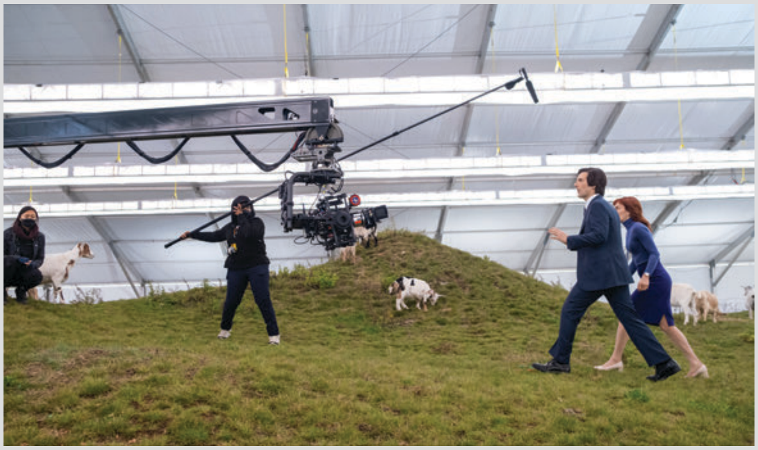


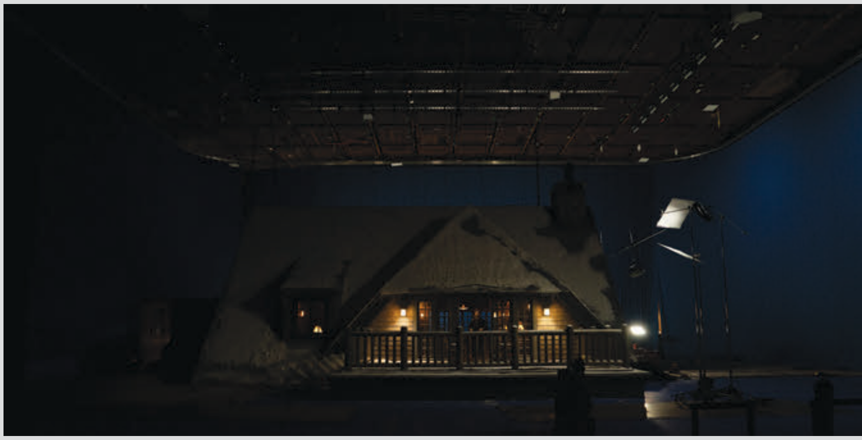
Spotlight on Lighting | Illuminating the Divide

The lighting design in *Severance* reinforces the psychological boundary between the innie and outie worlds. Cinematographer Jessica Lee Gagné, alongside Suzie Lavelle, BSC, ISC and David Lanzenberg, ASC, lit the two worlds as places of conformity and emotional isolation, respectively.

For the innie world, they used muted colors and low-contrast illumination to create a sterile, corporate feel. Most of the light comes from integrated overhead LED grids built for Season 1. “The architecture drives the lighting,” Gagné observes. “If it’s an office, the lighting will come from above. It’s a very toppy, oppressive office lighting.”

“For the hallways, we built a few hundred fixtures out of LiteGear [Chroma] LiteRibbon and LiteCard,” gaffer Kurt Lennig says. The Season 2 finale episode, in particular, took advantage of the hallway-ceiling lights’ RGB capabilities. Dimmer-board operator Kevin Casaletta notes that the custom-made LiteGear Chroma rigging “proved invaluable to send the red emergency effect down the hallway while simultaneously strobing the cool-white parameter of the overheads. Through one simple effect, we could alter the strobing from an ‘all fixtures strobe together’ look to individual fixtures chasing the red emergency lighting down the hall.”

Lennig adds that “the MDR set used roughly 115 SkyPanel S60-Cs



Innie world | Left, from top (all from Episode 3): Mark and Helly begin to navigate a romantic relationship; a conversation between Mark, Helly and Irving in the MDR office; filming Mark and Helly’s visit to Lumon’s Mammalians Nurturable, aka the “Goat Department.” Outie world | Right, from top: Mark blocks the car of Harmony Cobel (Patricia Arquette), an exiled Lumon stalwart (Episode 2); behind Burt’s husband, Fields (John Noble), are windows that peer out to a completely black exterior (Episode 6); in a “birthing cabin,” Cobel forms a reluctant alliance with the innies (Episode 9, Lanzenberg/Briesewitz); the exterior set of the cabin where outie Mark wrestles for control of his fate (Episode 10, Gagné/Stiller).

skirted to individual ceiling tiles."

Custom mobile sources also played a role in the office lighting. "We built a 2-foot LED tube in a baggy diffusion we call 'The Sock,'" Lavelle says. The fixture contained Astera Helios Tubes inside Lightsock diffusers. "You could move that around and stick it anywhere — it was handy."

"There is not a lot of floor lighting, per se," Lanzenberg notes. "It's almost all practical from the overheads, with no soft sources pushed from the ground. I added a couple of eyelights and that sort of thing for a little sparkle. But for the most part, it's lit using the overheads as available light."

Maintaining a cold, even overhead glow is key to creating emotional distance between the characters in the innie world. "It makes you feel boxed in," Gagné observes. "I wanted to create the sense that the characters could never escape this environment, and even the light is trapping them."

The outie world emphasizes shadows — and the stark contrast between the interior and exterior realities is part of what drew Gagné to the project. "I love that we're allowed to push the darkness," she says. "We're really not afraid to let things fall off into black."

Mole-Richardson Molebeams proved to be the MVPs for the outie world. "We use a lot of Molebeams and then let the light push in with no fill, no overheads, nothing," Lanzenberg says. Lennig elaborates, "We used 10K and 20K tungsten Molebeams for some exteriors, like Mark's race into Lumon in Episode 3, 'Who Is Alive?,' and whenever we were in the lobby of the Lumon building. Jessica was outstanding at scheduling our day work for optimal sunlight/direction."

"Ben likes darkness, and for a cinematographer, the question becomes, 'How dark can I go?'" Lavelle notes. "To show true darkness, you need a big highlight or point of peak light so that the black falls to deep black as you view it."

Notes Stiller, "With digital technology, you can see so much more at night compared to movies shot on film. Back then, things did fall off more on night shots unless you lit up everything. Now, with how sensitive digital sensors are, it's great to have that contrast, and you can figure it out in the timing if you need to see a little more."

Acknowledging his near-exclusive reliance on key light in the outie realm, Lanzenberg notes, "We let the characters move within the rooms without necessarily trying to see their eyes all the time. You feel the gloom of the winter and the oppressive trauma they've gone through."

For night exteriors, all the practicals were outfitted with Nyx bulbs, LED tape or dimmable commercial LED fixtures (0-10V analog dimmers converted to DMX512 protocols).

Briesewitz appreciated the freedom to embrace darkness. "It's an icy, stark and lonely outer world," she says. "It feels like the characters live in a vacuum, because whenever you go inside the houses, especially at night, the world outside falls away." Referring to the dinner scene between Burt, Irving and Fields, she adds, "We had to hold ourselves back and say, 'No, it goes completely black outside the house, there is nothing there.'"

Stiller credits Gagné with instilling *Severance* with a minimalist lighting philosophy. "I'm pretty sure she's a big fan of Gordon Willis [ASC], and he was famously not afraid to go dark," he says. "When in doubt, maybe turn off a light, and it always ends up looking cool. I love watching a scene play in [partial] silhouette; you know what you need from the story or emotionally at that moment, and it's so much in the eyes."

— Noah Kadner

"For my first time directing, I wanted to be right next to the actors," she continues. "Usually when I am lighting, I am close to Luke Taylor, our DIT, but for this episode, I stayed as close as possible to the actors. I would alternate between my headsets depending on what job I was doing: Comtek for directing and HME when I was in cinematographer mode. I would put the HME back on and it was like, 'Okay, now I'm a DP again!'"

Directing the episode "changed my life," Gagné adds. "I realized [directing is] something I wanted truly and very deeply that I had not acknowledged. I don't think I would have directed if it wasn't for *Severance*, because I didn't want to be so vulnerable and put myself in that situation, especially this far along in my career." Following the completion of Season 2, Gagné is now working on her first feature as a director.

Episode 7 — directed and shot by Gagné (bottom, at right) — is told primarily in flashback and features pronounced differences in look between the outie and innie versions of Mark and his wife, Gemma (Dichen Lachman).

Lanzenberg and Briesewitz captured this Episode 9 scene featuring a confrontation between Milchick and Drummond (Ólafur Darri Ólafsson). "We shot from another bridge on the opposite side of the building with a very long zoom," says Briesewitz (bottom, second from right).

Season 2 Snapshots

In Episode 9, "The After Hours," directed by Briesewitz and shot by Lanzenberg, a heated confrontation between Milchick and Drummond on the ledge in a Lumon atrium is composed for maximum psychological pressure. "Their conversation is so controlled," says Briesewitz. "There is so much rage underneath, but it's also beautifully controlled."

Working on location in the Bell Works complex in Holmdel, New Jersey, Briesewitz and Lanzenberg framed the scene from an extreme distance to compress the space. "We shot from another bridge on the opposite side of the building with a very long zoom," the director says. "It feels like all these vertical and horizontal lines are moving in on our characters, keeping them contained."

For the marching-band sequence in the Season 2 finale, "Cold Harbor," Stiller and Gagné collaborated on a tightly choreographed lighting design that matched the players' rhythm. "That was Kurt, our gaffer, and Jessica and I figuring out with the music what the patterns of the lights would be," Stiller says. Certain POV shots of the musicians were captured on a Sony FX3.

The sequence required precision. "It was painstaking, and Kurt and [dimmer-board operator] Kevin did an amazing job and gave us several options," Stiller notes. "It wasn't like you could easily change it on the fly." Casaletta explains, "We synced the ETC Gio to the audio playback,

"It feels like all these vertical and horizontal lines are moving in on our characters, keeping them contained."

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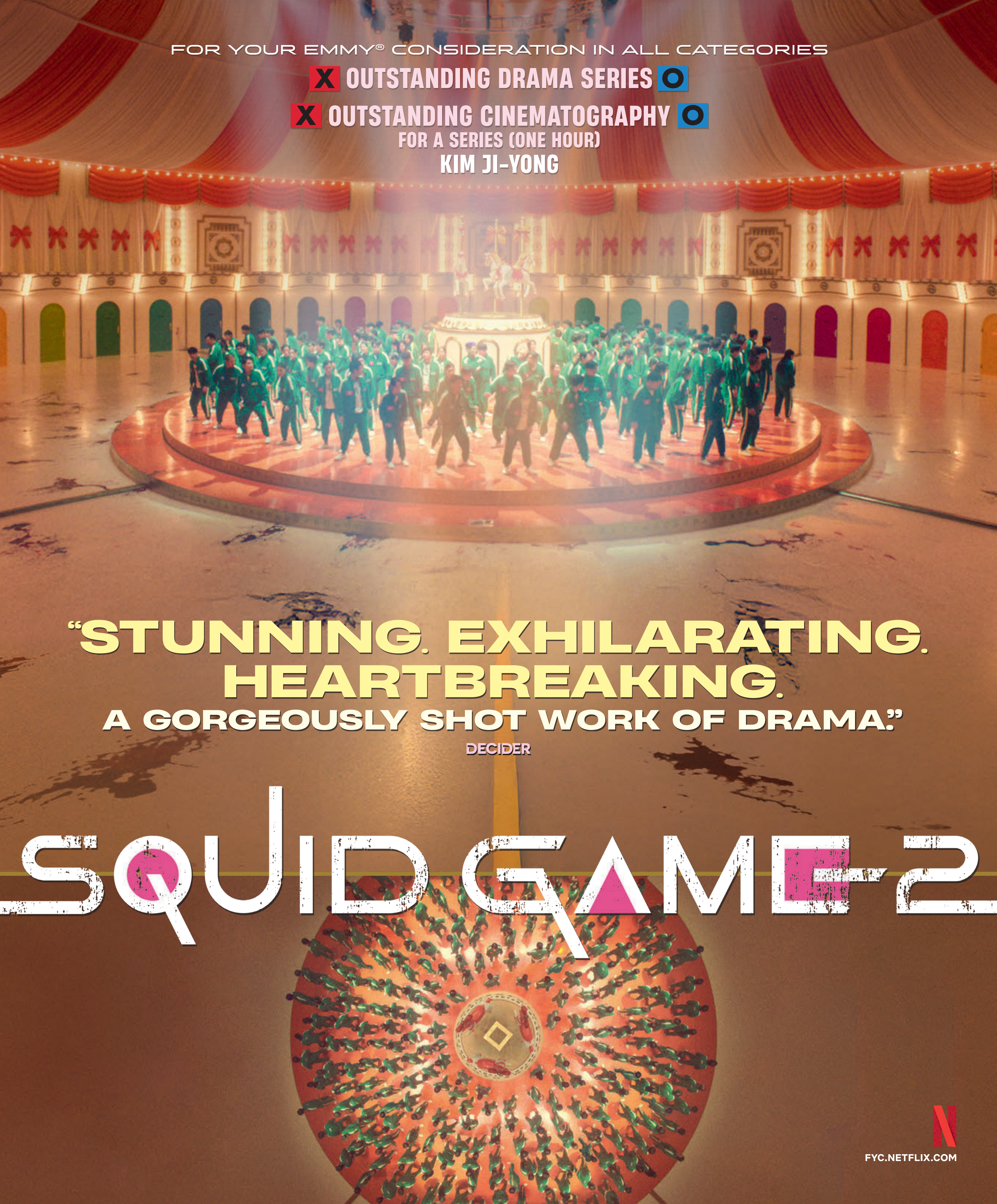
1. Lavelle (holding phone) and Donovan (far right); 2. Gagné; 3. Lanzenberg and Briesewitz; 4. Lanzenberg, with Briesewitz behind him; 5. Stiller (center).

ensuring that the lighting effects were as precise as the music. As the music progressed, different lighting effects were triggered."

Gagné details the workflow: "Ben will usually have the music first, and then we'll choose whatever colors we think fit." She'd give the lighting team "a first pass at it," then review tests and share videos between setups. "When we felt confident about it, we'd show Ben whatever we'd come up with, he'd give notes, and then we'd refine it."

Season 2 concludes with Mark and Helly sprinting deeper into Lumon's underworld as the frame freezes and zooms in. "That hallway was a very tough place to shoot, so we knew the lighting pattern would be important," Stiller says of the pulsating red-and-white lighting scheme and handheld camera. The decision to end on a freeze frame emerged early. "It reminded me of films like *The Graduate* and *Butch Cassidy and the Sundance Kid*, where you don't quite know what's going to happen at the end of the movie," Stiller notes.

To evoke the optically printed feel of those cinema classics, the team initially planned to do it the old-fashioned way. "We thought, why not shoot it out to film and then do the freeze-frame on a real optical printer?" Stiller recalls. "But we didn't have any luck finding a working optical printer in the U.S., so we ended up filming the shot out to 35mm and then doing the freeze-frame and zoom digitally."



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The finale episode of Season 2 features a marching-band sequence. From top left: Stiller directs a shot of Helly stealing Milchick's walkie-talkie, with Mark Schmidt at the camera; Mark and Helly are surrounded; the pair plans their next move; Dylan (Zach Cherry) and the band face off with Milchick; the couple escapes into the unknown.

Final Touches

Color grading on *Severance* is an extended, collaborative workflow led by Gagné and colorist Poole. Working remotely, Gagné relied on an iPad Pro when viewing, but had to fly in for certain final approvals. Apple's proprietary delivery platform was also used to preview the final output. "You can watch what the show will look like when it goes completely through the pipeline," she explains.

Poole also helped evolve the look for Season 2, which Gagné describes as "richer and more contrasty, especially if you look at both seasons side by side. I give Tom the credit for getting us there." Once the base grade was locked, Gagné and Stiller completed a final pass together. "You need at least one DP present for the whole thing, or else there [will be] inconsistencies," she adds.

After wrapping the latest season, the creative team reflected on the intensity and meaning behind their work. For Gagné, the experience nudged her to explore directing. "It took all this experience to discover what I really want in my career," she says. "So I'm grateful, and it's beautiful when I think about it today."

Lanzenberg says he was immediately drawn in by the show's unique style: "I binged right through the first season, so being a part of this show was amazing." Lavelle was similarly energized. "It was just fun to dig deep in a nerdy way into every scene," she says. "It's what you dream about: to be involved in a show where the composition and camera movement are such an important part."

Briesewitz echoes that sense of engagement: "It reaches you on some deeper level. Just to get lost in this world and find the deep emotions for these characters — that's my greatest takeaway."

Says Stiller, "Making a show like *Severance* is a long process, and you hope it resonates with an audience down the line. It's nice when people appreciate what you did, and a good reminder to have faith in your choices." ⊙

For more from Ben Stiller on his approach to making Severance, *visit theasc.com/articles/ben-stiller-on-severance.*

Watch our Clubhouse Conversations interview with Jessica Lee Gagné here:

Envisioning Myriad Futures for *Black Mirror*

Four cinematographers shed light on the sci-fi drama's seventh season.

By Sarah Fensom

Every episode of Netflix's *Black Mirror* is a stand-alone science-fiction drama about technology and its impacts on society, but woven throughout the series are the common threads of suspense, satire and paranoia. Because most episodes feature discrete casts, characters, settings and timelines, cinematographers have considerable leeway to imbue them with their own sensibilities, a rare luxury on a television series.

Two who worked on *Black Mirror*'s latest season are Jo Willems, ASC, SBC and Stephan Pehrsson, BSC. Willems, who was new to the show, shot the episode "Plaything" for director David Slade, a longtime collaborator. Perhsson has shot several episodes of the series, usually in collaboration with director Toby Haynes.

AC recently spoke with them separately about their approaches to the series, and also asked two other cinematographers who contributed to Season 7, Philipp Haberlandt, BVK and Álvaro Gutiérrez, AEC, about the lighting philosophies they brought to their episodes.

LUXURIOUS HAND
WAGYU
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Opposite: Computer coder Nanette Cole (Cristin Milioti) enters a virtual-reality game in the *Black Mirror* Season 7 episode "*USS Callister*: Into Infinity." This page, clockwise from top left: Cole and Walton (Jimmi Simpson) inside the game; Rosy McEwen as Verity in "Bête Noir"; Peter Capaldi as the older Cameron in "Plaything"; Paul Giamatti as Phillip in "Eulogy."

"Plaything": Willems Gets Trippy

***American Cinematographer*: What were some of the key points that arose in your prep for this episode with David Slade?**

Jo Willems, ASC, SBC: I've worked with David since the late '90s, and the funny thing about him is that he rarely uses any references of any kind — we just talk about the project. With *Black Mirror,* you can do your own thing for every episode, which is quite amazing and unique as a setup. So, even in the seventh season, you have great freedom. One of the most important things we had to consider was period. The episode is set in 2032 and 1994. We asked ourselves: What does 2032 look like? What's the tone? What do the 1990s look like? Fairly early on, we decided we wanted the '90s to look a little gritty, with a *hint* of 16mm look, and the future to look cleaner and more polished.

In several 1994 sequences, the protagonist, Cameron [Lewis Gribben], drops acid, and you really showcase his sensory experience. How did you achieve that?

Some of the most exciting stuff was creating those LSD sequences. We used Sphero 65 lenses from Panavision. I wanted to bake in the look for the LSD sequences with a constant changing color flasher. We wanted that effect to feel handmade and not done in post. How anyone would experience an acid trip is obviously very subjective. We had tried getting a flasher from Camtech in Los Angeles, but in the end we built our own very rudimentary version of a flasher: two strips of LED taped inside the matte box. When you turned the lights on in the matte box, it would flare the lens and flash the image without [the viewer] really knowing where it came from. Combined with the Sphero 65s, that gave us the flashed look we wanted. It was very aggressive at times, but it worked really well. Our dimmer board had something like 500 channels of dimming for this one strip of LED. On top of our matte-box color changer, we had Astera LED tubes in the room that would also change color randomly. It was super fun. With our dimmer-board operator, Danny Cunningham, and our gaffer, Stephen Mathie, I was in really good hands. I wanted everyone to bring their ideas to these sequences; it's fun to collaborate and it keeps everyone engaged.

As Cameron continues to take acid, he starts to think he can communicate with "the throng" or "thronglets," the little creatures in the PC game he's playing. He has several epiphanies as he sits at his computer. How did you achieve those?

We sort of came up with our approach on the day of shooting. We basically had two guys lying on the floor moving small tungsten units — 150-watt Dedolights — in and out of frame behind the actor's head. We just went very subjective in the storytelling. It does not make sense in the physical world, but it's very effective in the context of the character's experience.

His apartment in 1994 is dark and dingy, but there's this gorgeous natural light coming through the windows. What did you use for that?

We were shooting on a small stage in West London, and we put a big

From top: Young Cameron (Lewis Gribben) becomes utterly absorbed by a PC game in "Plaything"; A-camera operator Ilana Garrard lines up a shot of Gribben; director of photography Jo Willems, ASC, SBC.

white bounce outside the windows and hit it with a few larger tungsten units. I think it was a 20-by-12 Ultrabounce. We had a few Arri T12s and a few Arri T5s. We didn't have a sky or a Translight. It was a very simple setup.

For some scenes, like when Lump comes into the apartment and Cameron is still tripping while he's on the phone, there's all this light streaming through the windows, which we did by aiming a couple of 5Ks straight into camera.

I wanted it to feel real, but at the same time I wanted to "break" the image a bit and overexpose the background to reflect Cameron's state of mind as he is high on acid. I wanted the space to have a bit of grit, and it also needed to feel real, like we'd just wandered in there. And, like you said, it felt very dingy; we didn't want it to feel too perfect and controlled.

By contrast, when older Cameron [Peter Capaldi] is being questioned in the police station in 2032, there are LED panels and slivers of natural light coming in.

In the initial set design of the interrogation room, there were large white opaque panels that looked like windows, but I was afraid they would put the actors against an overexposed white background once we got into the closer coverage. Our production designer, Cristina Casali, offered to put some louvers in to break the panels up, which gave the background more texture. There is no real visual connection to the outside world, so I suggested to David that I could make it look as if the interrogation started in the morning and ended in the evening, so the audience would experience a passing of time. We put a piece of track outside the windows behind Cameron with a T12 on it, and the electricians pushed the T12 along as we were shooting. It was very subtle, but it changed the look of the room as the story unfolded. We also had SkyPanels outside the windows as softer sources. At times, we'd take the "sun" away and create an overcast moment. We were in London, after all. I just didn't

From top: Older Cameron awaits an interrogation; a remote arm tracks Capaldi; strong backlight adds drama to the sequence.

want the room to look the same throughout the entire interview.

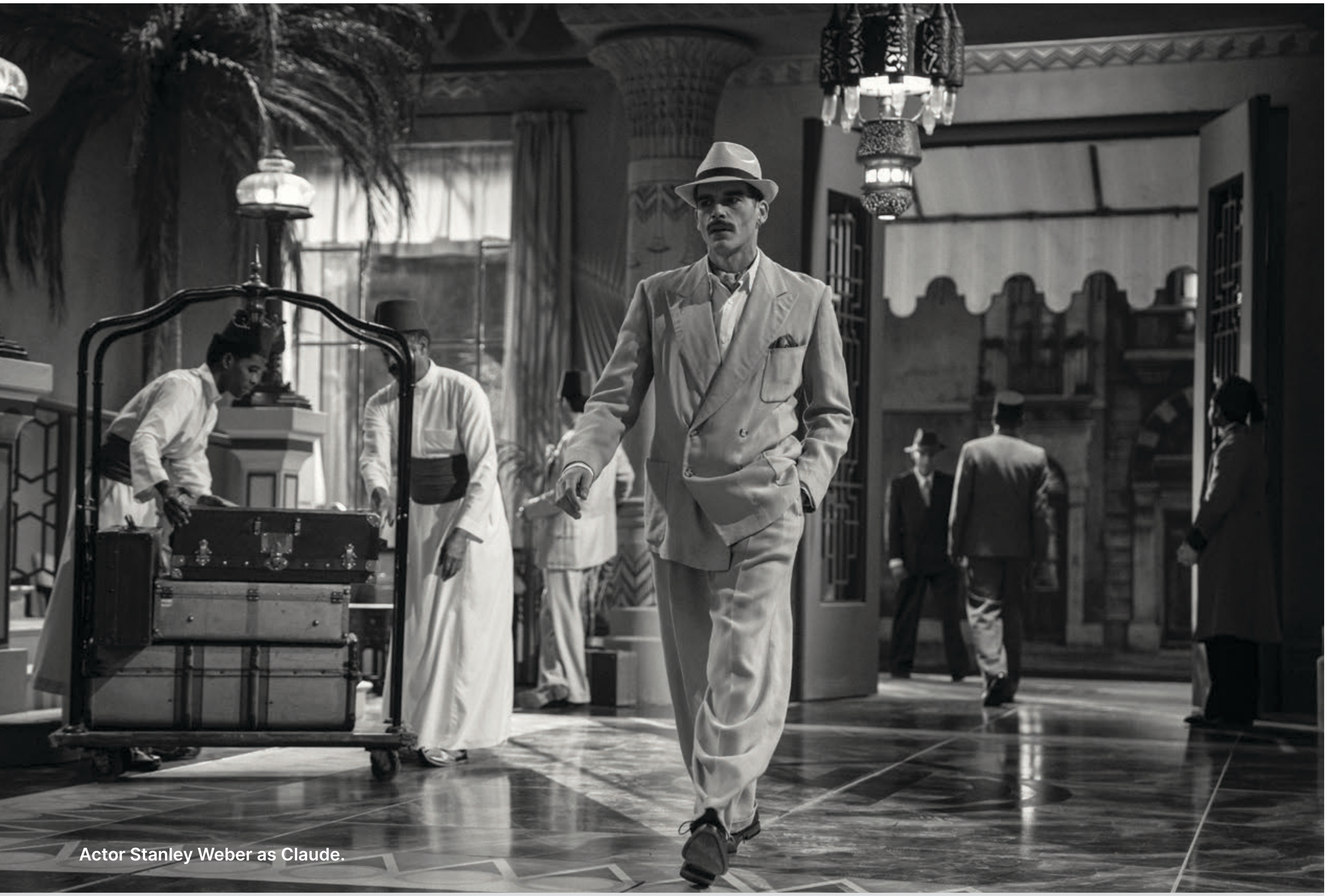
Tell us about your camera package.

We used the [Arri] Alexa 35 because I knew we'd have to work fast, and I wanted the camera with the most dynamic range. I also knew I could at times push it to a higher ISO if I really needed it. For example, the fight sequence is all shot at an 11-degree shutter angle, which is something David has done quite often. For as long as we've worked together, we've used very skinny shutters to create kinetic energy during fight sequences. Even in dialogue scenes, it can provide an unusual quality — you're not really sure what's going on, but something about the tension changes. In years past, when we used to shoot film, the lighting could look artificial at times because of the need for a very skinny shutter and a very large amount of light, but on this show, I was able to shoot at 3,200 ISO, so I could keep the lighting more naturalistic.

Can you explain more about your choice of Sphero 65 glass?

We looked at a bunch of lenses. David and I have traditionally used quite clean and sharp glass, but we weren't really feeling that this time and we wanted a bit more character and flavor. I had used Spheros years ago on a commercial I shot with an Alexa 65, and I'd been looking for an opportunity to use them again. So, I showed them to David and he fell in love with them. Spheros are sharp but not sterile. The flares they create have a pronounced bubble/sphere quality, and when we started aiming light straight into the lenses during the tripping scenes, we got these large spheres that moved around Cameron's head. They're built for a [5-perf 65mm] format, but they work on a smaller sensor, too. They worked well for both time periods, especially because so much is done these days in the DI. I had initially thought I would use two different sets of lenses for the different time periods, but after some testing, we stuck with one set. I had thought that I wanted to use more modern lenses for

Continued on page 28



Actor Stanley Weber as Claude.

Spotlight on Lighting | Philipp Haberlandt, BVK on "Hotel Reverie"

An unusually immersive remake of a classic 1940s film propels the plot of the Season 7 episode "Hotel Reverie," shot by Philipp Haberlandt, BVK and directed by Haolu Wang. Turning to the classic films *Rebecca*, *Sunset Boulevard*, *Casablanca* and *Brief Encounter* for inspiration, the duo developed an approach Haberlandt details here:

"Getting the opportunity to create a black-and-white film-noir romance within the *Black Mirror* universe was a very thrilling offer. Director Haolu Wang and I shared this passion, and from the very beginning we were determined to craft [the episode] as authentically as possible. With our amazing gaffer, Pete Taylor, and his team, we embraced the classic studio look, which has its beauty but also an artificiality. Everything was shot on stage. We worked with a saturated lighting grid and we also paid close attention to period accuracy in choosing the lamps — lots of 1K and 2K Fresnels and Arri SkyPanels as bank lights, all moveable on pantographs. The idea was to use classic three-point lighting for portraits, where we had the key light quite steep from above and the fill from the bottom, paired with strong backlights. We wanted the close-ups to be as glamorous as they used to be, so the audience would feel the iconic characters from a lost era of romance. So, we filtered even more in camera and light.

"For eyelights, we made sure to get round reflections, and we mostly used a Briese [Focus] 77. We paid a lot of attention to shadows, the film-noir element, which gave us a visual texture with patterned hard light. We used everything to shape the light, like window frames, palm trees or beautiful Moroccan practicals provided by the art department. For harder light fixtures, we used open sources, like PAR cans and [ETC Lighting] Source Fours.

"When Brandy and Clara are stuck in the simulation, there's a beautiful montage sequence where we discover how they are spending months in love. To create the feel of time passing, we did a long pull-out from the two of them sitting in the frozen-world lobby of the hotel, while the 'sun' moved from sunrise to sunset. To create this effect, we used a Vulcan 18K remote on a crane. The shadows move beautifully within this artificial setting. To enhance this effect, we simultaneously dimmed down the exterior skylight, created with a large amount of space lights, and we also increased the interior contrast to a moodier atmosphere, including all practicals."

— *Sarah Fensom*

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the scenes set in the future, but some [of those] suddenly had a different quality. I think it's important to know all the tools available in the DI to get to where you want to be with the final image.

How much of the look was baked in vs. realized in the final color grade?

To be honest, it's very hard to bake in a final look on set, since you can endlessly manipulate the image [in post], but we made strong choices on set to get us closer to where we wanted to end. We developed a good LUT for both time periods and didn't do too much color-correcting on set. In the early days of digital cinematography, I would endlessly tweak color, but now I've gone away from that. What we did bake in, though, was the flashing of the LSD scenes. If anyone hadn't liked that effect, we would have had to reshoot those scenes; the flashing is all over the image, and you can't remove it. I don't think there was any VFX work on those sequences. The color was done by Jean-Clément Soret at Company 3 in London. Jean-Clément and David did the color together, as I could

Above: *USS Callister* crewmembers — played by (from left) Billy Magnussen, Osy Ikhile, Cristin Milioti, Milanka Brooks and Paul G. Raymond — discuss their dilemma. Pictured here: Pixie Bunkin (Iolanthe), a vengeful gamer, attacks the *Callister*.

not attend those sessions. What they did do in the DI suite was to give the 1994 period more grit with added grain, and I believe they also added some sharpening to the modern period. Since David started his career in music videos, it's natural that he loves being involved in color. I trust him and Jean-Clément to do the right thing.

Did you use a different approach or camera language to shoot young Cameron as opposed to older Cameron?

The only reference David brought up was Sidney Lumet's [1957 feature] *12 Angry Men*. When we shot older Cameron in the interrogation room, David wanted to start with wider coverage and go longer and more intense as the episode progressed. At times we did cut back to a very wide shot of the room, but the lens progression was the strategy for older Cameron. That wide lens, a 12mm Laowa, was the only non-Sphero lens we had. For the scenes involving young Cameron, things were much more subjective in terms of both camera and lighting language. We took a less formal approach, because we wanted the audience to experience the story from his state of mind and perspective.

My favorite sequence is when young Cameron sits on a train while he's tripping on acid. It's the culmination of all our efforts to convey his experience, [a moment of] total psychedelic paranoia, and it was shot with a static train in a little train museum in London. Danny, the dimmer-board operator, really made that sequence shine from a lighting perspective. It's rare that we get to do those kinds of setups. The subjective nature of our approach made the connection with Cameron very personal and intimate for the audience. You're really *with* him as he is seeing the thronglets develop.

"*USS Callister*" and "Bête Noir": Pehrsson Finesses Different Looks

***AC*: You've shot several episodes of the show. Do you feel the camera language is different every time?**

Stephan Pehrsson, BSC: Yes. The [visual] language has to fit the story. The script comes first. There's a bit of a style to the show, but a lot of it comes from the design and the script. For instance, the [Season 6] episode "Demon 79" is set in the north of England in the 1970s, so we went for a very different approach rather than sleek design or chrome; it's grittier, and we used more earth tones. I think that's the exciting part of *Black Mirror*: Every episode has its own flavor.

You collaborated with Toby Haynes on the fan-favorite 2017 episode "*USS Callister*." Now you've shot the sequel, "Into Infinity," and technology has really evolved. How different was your equipment then and now?

That was an issue for us with "*USS Callister*" because we had to deliver 4K to Netflix, and we wanted to shoot it anamorphic, so the only camera we could shoot on was Red. I think it was a Red Helium. Everybody uses vintage lenses now, but back then, the only anamorphics we were allowed to use were the [Arri/Zeiss] Master Anamorphics, the cleanest, most precise anamorphic lenses you could have. We had many VFX on that episode, and they couldn't track the vintage lenses.

On "*USS Callister*: Into Infinity," we used the Alexa 35 and Panavision T Series anamorphic lenses, which are sort of based on the B and C Series anamorphics but have a modern housing. They operate like modern lenses, but the image looks vintage. We could swap lenses easily, and the close focus was really good as well.

At the end of the original *USS Callister* episode we did for Season 4, we wound up in this sort of J.J.-Abrams *Star Trek* movie world. We had progressed from a classic 1960s *Star Trek* look and gone through the

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Pictured here: Crewmembers capture a shot of Simpson, as Walton, on an alien planet. Below: Cole and Walton explore the environment. Bottom: Cinematographer Stephan Pehrsson, BSC angles in for a shot of Milioti and Ikhile.

wormhole to end up in the future. We wanted to carry that look into this new episode for Season 7. In Season 4, because we needed those J.J. Abrams-style lens flares, we were able to use vintage lenses for one scene, Toyo Optics lenses from Arri Rental in London. But they were barely holding together, and every time we had to change the lens, it took half an hour. They looked great, but they weren't practical to shoot with for a whole episode. So, we went with the T Series this time, and they gave us the look we wanted, for sure.

Why did you feel anamorphic was the right format for the *Callister* episodes?

We wanted the feel of a big event movie like *Star Trek* and *Star Wars*, and whenever I think "big sci-fi," I think anamorphic. It's those blue flares; the lens bends a bit, and you get that super-widescreen feel.

What lighting did you use to create that classic inside-the-spaceship look?

I think we just tried to light the actors in a very complementary way. You know, beautiful character lighting with a beautiful key light and a nice backlight — all those things that make it feel a bit crafted and like a classic movie. We couldn't do that for every setup, of course, because sometimes we were too far back and had to let the practicals do the job for us. But when we got in closer, we were certainly trying our best to light people as beautifully as we could. We used LiteMats and T-bars with textiles to soften the light.

Something we added for the ship this season was actually an effects thing. On the original "*USS Callister*" episode, we used a greenscreen as the ship's viewscreen for shots of the characters looking out into space. This time, as a cost-saving measure, we used an LED wall beyond the viewscreen, which allowed the actors to react to images in real time and feel like they were actually in space! We could shoot 360 and look out into space whenever we wanted to, which meant all of the reflections on

From top: In one of many homages to *Star Trek*, the crew captures a shot of Walton and Cole being "beamed" back aboard the *Callister* via the ship's transporters; an LED wall was deployed for shots of outer space beyond the *Callister*'s viewscreen; director Toby Haynes and Simpson in front of the set's viewscreen as the LED wall displays imagery.

the set looked correct. That was really cool.

A lot of action in "Into Infinity" takes place in the videogame's HQ, which has a darker look. What were you using in this office setting for lighting?

Many more practicals — what's above the tables, the little desk lamps. We were basically going with what was in the room, and if we felt the actors' eyes were too dark, we'd just come in with some fill light, using LiteMats or Astera tubes with soft boxes in the ceiling. We were trying to make it feel … it's probably wrong to say "like a documentary," but we were certainly on-the-shoulder and walking with the characters. Sometimes handheld can feel too shaky, so the operator would sit handheld on a dolly and we'd push them around to create a sort of uneasy feeling.

In "Into Infinity," we visit the garage where Robert Daly [Jesse Plemons] created the videogame. Later on, we visit another version of the same garage. Tell us about the different versions of that space.

For the past, which is basically a flashback to the 1990s, we went for an extra-soft filter — I think it was a Tiffen Black Satin 1 — just to make everything feel a little more hazy. And we pushed that, of course, in the grade; we gave the actors an extra boost. We played a little bit with digital filters you can add in post, where you sort of clean up the skin. We didn't do a full de-aging [on Plemons], but we tried the best we could to just sort of remove wrinkles and imperfections. And the space is very gloomy, sort of overexposed — it has that kind of "glossy memory" feel.

Later, we come back, and suddenly the garage is the heart of Infinity. They created this world for Daly, where he could sit for 500 years or

Tech Specs:	“Plaything”	“*USS Callister*: Into Infinity”	“Bête Noir”
	1.5:1	2.20:1	2.20:1
	Camera | Arri Alexa 35	Camera | Arri Alexa 35	Camera | Arri Alexa 35
	Lenses | Panavision Sphero 65	Lenses | Panavision T Series	Lenses | Hawk V-Plus, Angénieux Optimo zoom

whatever it was and produce the game from the inside. We wanted it to feel a bit magical. I think Toby called it “a Spielberg moment” It felt spooky; the whole thing was empty, and there’s just smoke. We wanted this big, glowing light coming out of the garage because you don’t know what’s in there. We wanted to create a little tension, so we shot that quite classically. The inspiration was Spielberg, like *E.T.*, to create that sense of mystery. When we see Nanette approaching the garage at night, before she went in, we had a lighting crane on every street corner, because the idea is that there are no streetlights and the only light is from the moon — but we still needed to see everything. So, we used a big, strong backlight, and then as many soft boxes as we could fit in, just to make it all sort of feel even and nice. We also added a bit of smoke to provide that extra spookiness.

Describe your work in Black Park, which stood in for one of the planets in the episode.

We shot those scenes over two days. We wanted sunny weather and lots of smoke, and that’s what we got. British summer can be very unpredictable, but we were so lucky — those two days just happened to give us enough sun to make it work. Then, in the grade, we pushed it a bit; we gave it a little of that Michael Bay teal-and-orange kind of look just

A “Eulogy” set (right) depicts an old photograph that Phillip (Paul Giamatti, left) steps into via groundbreaking technology. For a closer look at the visual-effects work that helped achieve this illusion, visit theasc.com/articles/black-mirror-eulogy-vfx.

Spotlight on Lighting | Álvaro Gutiérrez, AEC on “Eulogy”

In the Season 7 episode “Eulogy” — shot by Álvaro Gutiérrez, AEC and directed by Chris Barrett and Luke Taylor — a lonely man revisits his memories of a recently deceased ex-girlfriend. Establishing the look of the various photography formats depicted in the episode was key.

Gutiérrez explains: “I was really interested in exploring the distinctive textures of each photographic format that serves as a portal into Phillip’s memories, from Polaroids to 35mm black-and-white to disposable and point-and-shoot cameras. We used different camera systems and lenses to emulate the looks of the various formats: an [Arri] Alexa 35 with Leitz Summilux glass for the ‘present time’ in the story, an Alexa 35 with Cooke Speed Panchros for the ‘Polaroid’ effect, an Alexa 35 with Super Baltars for the ‘point and shoot’/‘disposable’ effect, a Mini LF with Canon K35s for the 35mm ‘reflex’ effect, and an [Arri Rental] Alexa 65 with Tokina Cinema Vista lenses for the ‘medium format’ effect. I considered using a T5.6/T8 to be more realistic with the depth of field, since some of these formats had a fixed T-stop closer to those apertures, but I finally decided against it; I was more interested in the qualities and characteristics of these various lenses, which you seemed to lose almost completely working at that kind of T-stop. We also had LUTs for each photo memory [to re-create] each format’s unique characteristics. I thought this approach could enhance the nostalgic element of the story while subtly reinforcing how memories exist as imperfect fragments, visually supporting Phillip’s journey toward reconciling with his incomplete picture of the past.

“The starting point for the light was a naturalistic yet filmic foundation, creating distinct visual identities for Phillip’s present-day reality vs. his photo memories. For his contemporary timeline, we used a gradual progression from bright daylight to evening and finally night to underscore how life passes almost imperceptibly while we’re lost in memories. In the photo-memory sequences, we maintained realism while incorporating flash-like lighting effects. Most of this timeline was shot in the studio, so we had full control of the lighting. Throughout those sequences, inside Phillip’s studio, we kept a constant color temperature of 4,000K in camera and 2,800K in the lighting that was motivated from the practicals. But outside the set’s windows, we kept shifting the temperature and intensity of the lighting; we made things a bit cooler, losing intensity almost each time we came back from a photo memory until we went to deep night.

“For the flash-like effect, we used a cooler front light that was overexposed on the characters close to it and then had a dramatic falloff. It wasn’t super realistic, as it didn’t power out the rest of the ambient light we used for the scenes, but I think it worked to add more ‘photographic’ elements. We designed 360-degree lighting setups that allowed the camera to experience these memory fragments with the same sense of discovery and spatial freedom as Phillip.”

— *S.F.*

to give it a vibe, something different.

Did you supplement the sunlight at all?

No. I mean, we were very conscious of which direction we were shooting, so we were following the path of the sun. But there was no access — we couldn't get in close enough because there were no roads to where we were filming — so we had to rely on nature.

The other episode you did with Toby this season, "Bête Noir," has a very different vibe.

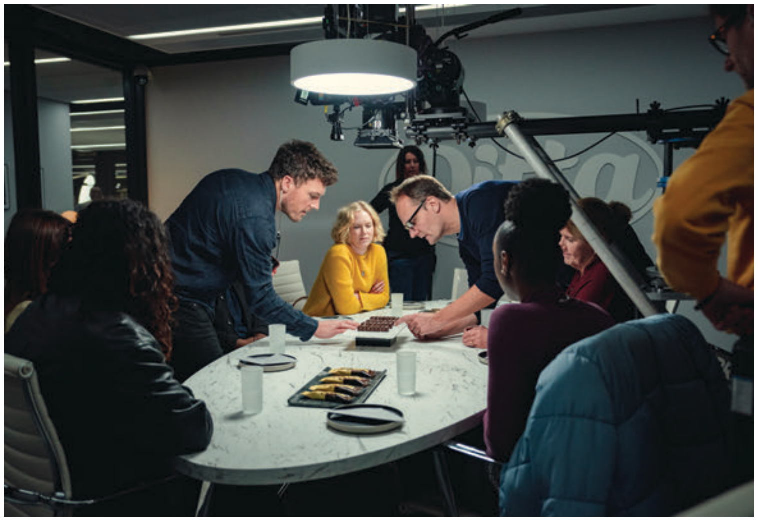
That was also shot with the Alexa 35. We did that episode first, and we knew it had to be very different from "Callister." We started out anamorphic because that's how we'd shot the episode "Demon 79"; the format had worked great on that episode, but we realized it didn't feel right for this one. When we were shooting in the office, where a lot of the episode takes place, we just stuck some zoom lenses on. We had two spherical Angénieux Optimo 24-290mm zooms, one on A camera and one on B, and we ended up just sort of constantly doing a slow zoom on all the shots. So, it became a much more spherical show, much more square. It was all shot mostly on the dolly. We did some handheld toward the end of the episode, when Maria goes mad, breaks into Verity's house and the fight ensues. But in the office, we just did these little, slow zooms and simple moves, a bit of Steadicam — again, classically filmed. Maybe the zoom gives you the feeling that you're observing the characters. It's more from the outside, perhaps "fly on the wall." That just felt right. We did that on the second day, and then we just did it more and more, until it essentially became the style of the show.

Tell us about that unforgettable almond-milk shot.

I think we got that on take two or three. Toby was very keen to have Verity spill some milk down her chin, and it just happened on one of the takes. It played so well because we were just zooming in, and we got this horrified reaction from Maria, as we're just zooming in, zooming in, zooming in.

You and Toby have worked together a lot.

Toby is one of my best friends. We met at film school in 2001, and we did our very first short film together, where he worked as the director and I was the cinematographer. Our teachers called it the worst short film they had ever seen. Stephen Frears called it an unmitigated disaster. But after film school, we stayed in touch, and we did a little TV project, a children's program, and it went quite well. We made a connection, and it's been a great joy being able to step along in each other's careers.



Culinary researcher Maria (Siena Kelly, top) grows perturbed — and, eventually, paranoid — when an old classmate, Verity (Rosy McEwen, middle), is hired by her company. Bottom: Cinematographer Pehrsson lines up an overhead shot of chocolates.

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Close Shaves for *Doctor Who*

Ashley Barron, ACS highlights barbershop storytelling in a unique episode of the venerable sci-fi series.

By Phil Rhodes

Doctor Who has been a stalwart BBC series since 1963, and the show's nearly 900 episodes have been achieved with practically every generation of motion-imaging tool ever invented. "The Story & the Engine," directed by Makalla McPherson and shot by Ashley Barron, ACS, is an episode from the series' latest iteration — its 41st season overall, airing on Disney Plus.

Barron's career has a multinational foundation. "I realized I wanted to be a cinematographer while I was at university in Australia, after being handed an Aaton 16mm camera," she says. "I then did an exchange semester at Ryerson University in Canada. The teaching assistant for the cinematography class suggested I apply to AFI, [the American Film Institute in Los Angeles]. I was accepted and it changed my life, allowing me to shoot projects around L.A., which in turn helped me build my reel. My thesis film, *Dreamland* [*AC* July '13], took me to [the annual cinematography festival] Camerimage in Poland. This industry is not just about your work, but your community."

Opposite: The Doctor (Ncuti Gatwa) emerges from the TARDIS in Nigeria, where he plans to visit friends. This page: The Barber (Ariyon Bakare, top left) takes over the shop owned by Omo (Sule Rimi, top right) with the help of Abena (Michelle Asante, bottom left) in "The Story & the Engine," an episode shot by Ashley Barron, ACS (bottom right).

That community had seen to it that a message about Season 41 was not the first time a *Doctor Who* subject line had popped up in Barron's email inbox. Years previously, she recalls, "a producer I know got me in the door for a meeting. *Doctor Who* is an institution, but I didn't grow up watching it, so I acquainted myself with the show and talked to DPs who had worked on the series."

Despite her preparation, Barron didn't join the show until two years later, when history repeated itself with another interview. "About a week before Christmas, I got an email from my agent, and I ended up in the same room I'd been in a couple of years prior!"

A Nigerian Story

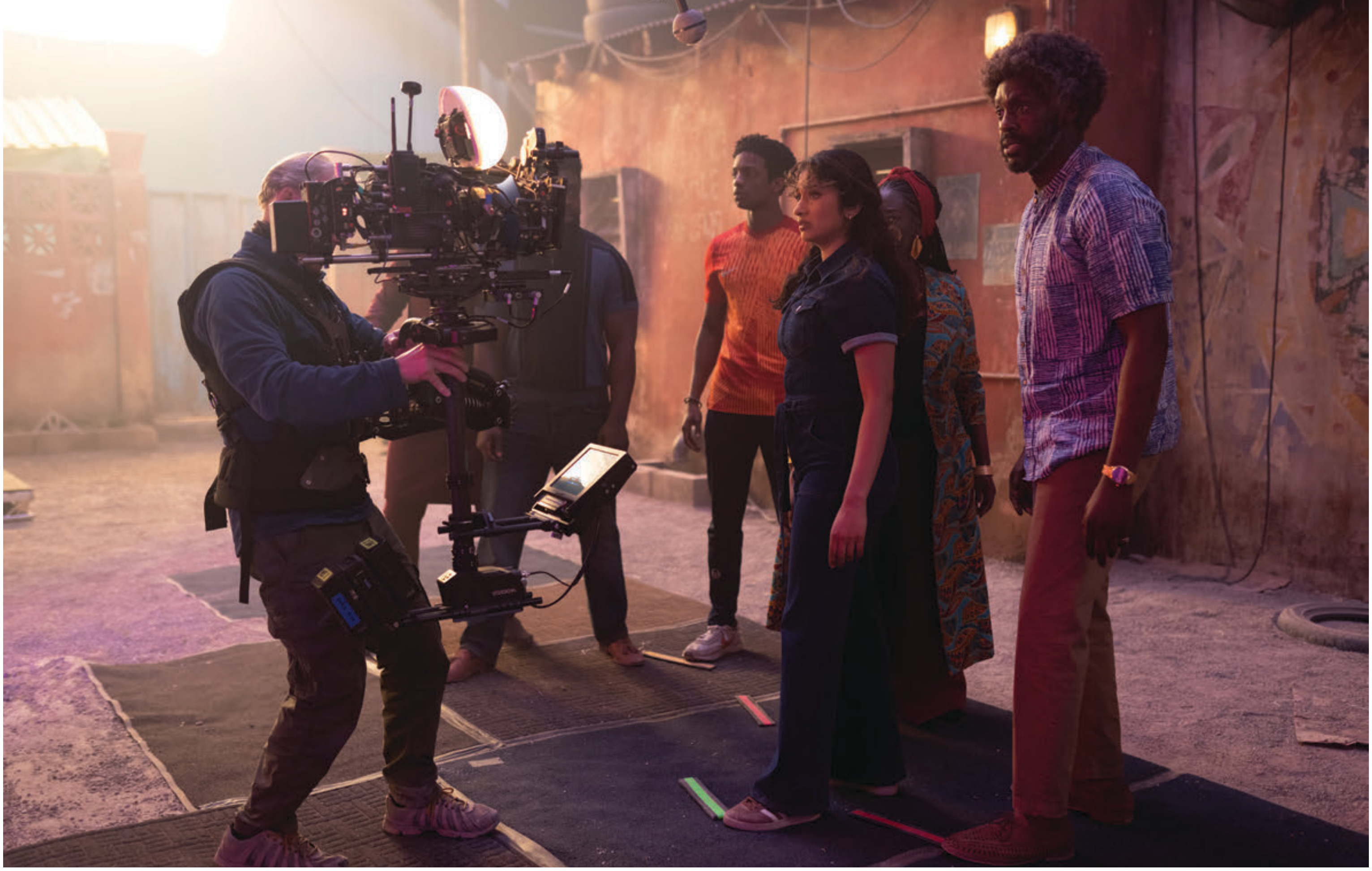
That second meeting was convened to discuss "The Story & the Engine," a script Barron describes as "very culturally specific. The series itself is an anthology, with a through-line of the various shapeshifting Doctors and their companions. This episode is a Nigerian story written by Nigerian playwright Inua Ellams. I think, for the showrunners, it was important that I connect with the cultural significance of the episode — which I did, without knowing I had to."

In the episode, the 15th Doctor (Ncuti Gatwa) and his loyal companion, Belinda (Varada Sethu), land the show's iconic, time-traveling TARDIS phone box in Lagos, Nigeria, where a mysterious figure known as the Barber (Ariyon Bakare) and his accomplice, Abena (Michelle Asante), have imprisoned several customers. When the Doctor also becomes trapped, he discovers that the shop is traveling on a giant spider weaving a web across space and time. The Barber, who needs the customers to constantly tell stories to fuel the shop's engine, is revealed to be a storyteller who once assisted the gods, and the Doctor and Belinda must find a clever way to foil his plot.

"The script had a very stage-play feel about it," Barron adds. "That was the challenge: How do you shoot more than 30 pages in one location, and how do you make those 30 minutes of scenes take the audience on a journey?"

Initial plans to shoot entirely in Nigeria were shelved for financial reasons. Wishbones, a local Nigerian drone unit, would capture establishing shots of the marketplace that would surround the barbershop, but Barron's work took place over three weeks at Bad Wolf Studios in Cardiff, Wales, with a mandate to capture the spirit of the West African nation. "As you can imagine, since this was a Nigerian story, there was a rich tapestry of color and texture in both production and costume design, beautifully supplied by Phil Sims and Pam Downe, which the cinematography had to reflect," she says. "Because of the show's

UNIT STILLS BY JAMES PARDON AND DAN FEARON; ALL IMAGES COURTESY OF BBC STUDIOS, DISNEY AND BAD WOLF.



Top: The show's alternative A-camera/Steadicam operator, Martin Stephens, captures a shot of episode castmembers on a set depicting the courtyard outside the barbershop. Above: The Doctor's companion, Belinda (Varada Sethu) heeds alarms in the TARDIS.

family-oriented time slot, the producers were also very particular about it not being a darkly lit show, even though the story can be tonally dark."

A Roving Camera

Barron's approach to the show's setting was founded on an instinct, shared with McPherson, to keep the camera mobile. "At the interview stage, Makalla spoke of wanting to move freely within the barbershop. Since we had to explore the dynamic between eight characters in one space over an extended period of time, we were drawn to the storytelling aspect of developing shots; we referenced the 'Spielberg oner' and discussed using different forms of camera movement to progress the narrative.

"In taking that approach, we predominantly used Steadicam, operated by James Chesterton, with Steve Rees on B-camera catching reactions with a long lens — usually from a dolly, shooting through 'camera traps,' which are portholes the art department deliberately cut into the set. Certain standoffs between the characters were covered by static side-by-side cameras. We also did a couple of jib shots, and even a dolly/zoom.

"We did go handheld when the story was starting to hit its climax," she continues. "One of the stories told by a character is very important, and it's an element of the episode that really touched me. That sequence represents an emotional shift that grounds both the characters and the audience in a historical tale. To help the moment to really land, we amplified the chaotic dynamic of the characters in the preceding scene by going handheld, which we hadn't done elsewhere on the episode. That approach also served to progress the emotional conflict that had started between the characters."

Maintaining a mobile camera required placing equipment carefully. "I'd had experience with enabling a 360-degree lighting approach on previous projects, such as the [Starz/Lionsgate] series *Dangerous Liaisons*, lighting for the grade. On *Doctor Who*, the barbershop set was designed in such a way that it could be lit to accommodate that goal. I don't think we ever had a full 360-degree move, but we got close, and there were no stands on the floor. Every light was rigged into a corner of the ceiling or was coming through the windows. The windows needed to feel consistently sunlit, as if the barbershop was suspended in time, so we pointed 10Ks and 5Ks with Half CTB at each window; we also floated Creamsource Vortexes on stands directly outside the set to fill in any

gaps the other units were leaving.

"I tested our strategy with the show's colorist, Gareth Spensley, to see how far we could push the look and still be able to bring it back in the grade. While looking at reference photos of barbershops in Lagos, I had noted the use of fluorescents and what looked like battery-operated LED tubes; I used those references as my inspiration to infuse color into the lighting. So, I asked set decorators Adrian Anscombe and Holly Thurman-Knirsch to incorporate Astera tubes into the set to give us full control. I cycled through colors on the tubes during makeup and costume tests to see what worked best with the actors' skin tones and the set designs. Then, to accentuate and extend the look, we used LiteGear LiteMats rigged into the corners of the ceiling; if necessary, gaffer Mark 'Hutcho' Hutchings and his team could move them between setups. To further mitigate any concern about faces not being lit, the art department added clear, diffuse panels in the roof over one side of the shop, which they aged. Above that, on a ladder beam, rigging gaffer Chris Kiley rigged three Creamsource Vortexes with heavy diffusion, which we could control for additional ambience."

During a key visual-effects sequence, the Doctor nearly gets sucked through the barbershop's door and into the nightmarish dimension beyond it. "That sequence involved a Steadicam shot with all of the actors on wires," Barron reveals. "We initially wanted to do a full 360, but after doing previs with Al King via Painting Practice, we became aware of some restrictions the set's space would have on VFX, and the dynamics of the shot's travel being reduced. So, we took an approach that avoided revealing reflections in mirrors, while allowing us to show the actors being lifted off the floor and to convey the feeling of being sucked toward the door. All of this was executed stealthily by our A-cam/Steadicam operator, James."

Top: A-camera operator James Chesterton (wearing cap) and B-camera operator Steve Rees line up a shot. Above: Rashid (Stefan Adegbola), Amaka (Michael Balogun) and Tunde (Jordan Adene) are trapped in the barbershop and forced to fuel its hidden engine with stories.

Lighting Control, Format, Lenses and Color Tests

With her lighting rigged into the set, Barron took full advantage of the option to control it remotely. All fixtures on set were on DMX controls, she says, emphasizing practicality: "Given the speed at which we shoot now, I don't know how you can work any other way than with DMX."

Barron maintained continuity with previous *Doctor Who* episodes by employing Zeiss Supreme Prime Radiance lenses, the production's preferred glass. "The Supremes are not my usual go-to set," she says.

A blend of on-set techniques and careful grading help lend the episode's exteriors a mysterious ambience.

"A cinematographer can be made or broken by many people in the chain. You need a team that's open to the collaboration in preproduction, that's able to take the calls from you when you're trying to bend the laws of physics, and that's got the story's interests at heart."

"I tend to go for softer, more characterful, vintage-like lenses, but the Supremes are the softest I've ever seen from Zeiss. It's nice to explore something new. Also, since *Doctor Who* is an effects-heavy show, an intelligent lens with metadata is integral for the VFX team."

Though mindful of that need for continuity, Barron was keen to shoot her episode in larger format with Arri's Alexa Mini LF. "Storywise, this episode is very character driven," she says. "Using full frame — close to the actors, but still feeling the out-of-focus world around them — renders more intimacy, but on paper the series is not generally an LF show."

When the cinematographer suggested the idea, the producers felt it would cost too much. In practice, though, the episode's VFX workload — with its huge thirst for pixels — was enough to mandate shooting much of the episode in larger format.

Thus equipped, Barron began testing early in prep. "We had to do a lot of testing with color, since the barbershop's walls were to be painted blue. The director preferred Black skin to be lit with warm light, so we had to find a hue for the wall color that she would respond to, in terms of the interplay with the color temperature we'd be using and how skin tones would interact," she recalls. "The art department painted flats for me in the hues we wanted to explore, and we shot tests against those with some of the show's extras. Given that the cast had varied skin tones, I sent the tests to Gareth at Company 3. He reviewed them to make sure that the colors we chose would be adjustable in the grade, and that we'd be able to achieve separation with the skin tones, especially if the actors' faces were going to be lit with different colored lights."

A Tight Squeeze

Such a busy production, meanwhile, meant sharing facilities, creating some very specific lighting challenges. "In production terms, *Doctor Who* is a machine, and space is at a premium," Barron says. "Two or three episodes are always being prepped and shot at the same time, so we were given a corner of the studio to build sets that served as our exteriors: a marketplace and the streets and courtyard outside the barbershop. So, the art department had to recycle the set and turn it around during our schedule. This was a challenge of physics: How do you replicate the quality of the sky within a small black void? The ceilings of the studio were low, so Chris suspended a 30-by-20 truss to which the crew could rig the lights. However, this also contributed to the physics conundrum, because the weight of the truss only allowed a certain number of overhead fixtures to be hung from it. We opted for 26 Creamsource Vortex8s for their weight and control, hung at intervals to help with spreading the light. Chris rigged everything on motors to give us more control. Though the Vortexes collectively provided a blanket source, the number of fixtures and their distance from the ground still yielded a harder quality, even with diffusion panels, so I opted to hang space-light adapters with diffusion targets, which I tested with the lighting team.

"That covered the ambience," she says. "Then, we had to mimic the sun. Given the limited space in our corner of the studio, and considering dust is a hallmark of Lagos, we went with Arri SkyPanel S360-Cs — as opposed to a harder light that would yield harsh shadows and inappropriate falloff — on a Niftylift HR28, which was maneuvered as backlight based on the blocking of each scene. We looked at photos of real markets in Lagos as reference, and we were drawn to those draped in tarps and textiles, where hard sun could provide accents through gaps and rips in the fabrics. To achieve those accents while keeping the weight of the overhead truss in mind, we peppered in PAR cans and four movers: a pair of Ayrton Dominos and two Robe Esprites. The movers were invaluable in their remote flexibility of movement and beam shape and strength, again controlled through DMX."

Creating and lighting the street and courtyard outside the barbershop presented further conundrums. "It was supposed to be dawn, and we were trying to light this area realistically in a very unrealistically sized space. Essentially, we had to make a space that was a quarter of a large warehouse look like a courtyard in Nigeria, and light it realistically with a 'sun' fixture that was literally right next to the set! Our visual-effects producer, Anne Akande, is from Lagos, and she supplied me with a photo she'd taken there at dawn. I was drawn to the contrast of the magenta skies against a golden sun, and I showed this image to my desk operator, Alan Tippetts. Direct magenta in the overhead Vortexes didn't feel right, so Alan applied some 'mixology' from his desk, which rendered a certain hue that worked once we set up our sun. What I again noted in Anne's photo was the inherent dust and texture in the Lagos air. So, when we didn't have the distance to use a point source that could emulate the kind of falloff you'd get from the real sun, I could lean into the softness that such textures would render. We utilized the SkyPanel 360s again, and I opted to take the edge off by adding Half Grid Cloth. Later, in the grade, we applied further shape to the light and leaned into the gold/magenta colors. The result is not entirely realistic, but it's got a certain magic to it."

The actors were suspended on wires to achieve a sequence in which the Doctor is nearly sucked through the barbershop's door and into the frightening dimension beyond, where a giant spider weaves a web through space and time.

Escaping by a Hair(style)

One key setup required an overhead view of a carefully crafted hairstyle that helps to resolve a plot point in a practical maze that was digitally extended with VFX. "Cornrows come from a time in history when Black people were enslaved and made maps in their hair to help each other escape," Barron notes. "We needed to be able to show both the hair and the maze and then connect them, and we wanted to do that as a oner. We used a [ServiceVision] Scorpio 45 that had to be higher than the maze set, which was 8 feet high. Our key grip, Bobby Williams, created a platform for our crane base that spanned the length of the set. We could start at one end with the Doctor and Belinda, get over the center of the maze as our heroes navigate it, and then come back down to them again."

Such a technical shot, Barron says, involved the combined efforts of the previs, art, lighting and VFX departments, as well as Spensley. "There were no rigging points in the ceiling of the studio, so we could not build a large soft source. Hutcho and Chris raised a 12-by-12 soft box of Half Silent Grid Cloth with 16 Vortexes on a 21-meter rotating telehandler. At that height, it created a shadow from the passing crane when it was directly overhead, so we had to come at an angle.

"During the grade, Gareth merged the real set to the VFX extension and smoothed out contrast. We darkened certain areas and created pools of warm, glowing light to match what the art department had done practically,

An overhead shot of a giant maze helps orient viewers as the Doctor and Belinda try to work their way through it.

so there were lit areas for the Doctor to run through.”

Grading on Set

Something Barron has wished she'd had on subsequent jobs, she says, is the option to grade live on set. “On *Doctor Who*, I had a lovely DIT, Nick Everett, who was using LiveGrade. We had a little open tent that would sit next to the set, and he'd have two monitors [to display] the pre-established show LUTs. I could review everything there, and he would make adjustments in the background to match our cameras. Nick was also tasked with having to manage all of my remote controls, as I like to run a Pola filter and Variable ND remotely, as well as iris control. Explaining the importance of LiveGrade to a production can be very difficult, but once you experience it as a cinematographer — especially when you only have two days for tests, and when you're moving as quickly as you can to balance two cameras and make everything look right — going without it can be very challenging for the entire workflow. Fortunately, the producers on *Doctor Who* saw the value of it before I arrived.”

The episode wrapped in March 2024, and final grading began later that year, in December. In the interim, Barron began working on her next project, in Northern Ireland. She notes, “You hand over what you did to the powers that be, and they do the edit.” She knew a highly mobile approach to material with so many people in a single space would require a careful polish. “By the time we got to the final grade, I'd been sent an offline, so I could get myself acquainted with the edit and how it would affect the grade. Again, my approach was always lighting for the grade, in broad strokes, because we had up to eight actors on set at the same time.”

With two days to supervise color, Barron took care to brief Spensley as fully as possible. He then made a preliminary pass that could be finalized in the time available. “Gareth has been grading the show for years, so there was a real

Tech Specs: 2:1
Cameras | Arri Alexa Mini LF
Lenses | Zeiss Supreme Prime Radiance

Our heroes confront the Barber at the tree that serves as the source of all storytelling.

benefit in his knowledge of the show and how to approach it. He is also respectful of the guest filmmakers, which is what the director and I were. We spoke a lot in preproduction about the approach. Then, once I'd seen the episode, I sent Gareth a number of references that reflected the depth of color and color contrast I was after, curated via ShotDeck. We jumped on a call to discuss those references, in terms of what we liked and didn't like, and how they could translate. He did a pass, and it was 90-percent there."

The challenge of simulating an African city on a Welsh soundstage benefitted hugely from Spensley's skill — particularly, Barron says, when the need arose for image-shaping that the filmmakers couldn't achieve on set. "There's a moment when the Doctor walks up to the barbershop for the first time. He's supposed to be in this dark, dead-end alley between tall buildings, which we obviously couldn't build. Gareth took the liberty of creating the thick shadow of a building that he presented on Day 1, and the shot finally started to feel right to me! He was also able to supply texture we weren't able to get practically — like dust in highlights that made certain settings, particularly the marketplace, feel even more rounded. This was on top of the shaping that our 360-degree approach required, and window control."

Collaboration Is Crucial

On a project with so many inherent challenges, Barron stresses, having a good team becomes more critical than ever. "A cinematographer can be made or broken by many people in the chain," she says. "You need a team that's open to the collaboration in preproduction, that's able to take the calls from you when you're trying to bend the laws of physics, and that's got the story's interests at heart.

"At one point, [showrunner] Russell T. Davies came up to me and said, 'You're making this look amazing!' I replied, 'Well, I've got stellar collaborators.'" ⊙

"Everything Was Connected": *Adolescence*, Episode 3

Cinematographer Matthew Lewis breaks down the lighting and movement for a pivotal chapter of the Netflix series directed by Philip Barantini.

By Rachael K. Bosley

Lighting the four-episode British drama *Adolescence*, about a 13-year-old boy accused of murdering a female classmate, was largely a matter of staying true to the quotidian environments in which the story unfolds — a police station, a high school, a detention facility, the terraced house where the boy's family lives — while facilitating the single, unbroken camera move with which each episode was captured. Aspects of the task were familiar to cinematographer Matthew Lewis, whose prior collaborations with *Adolescence* director Philip Barantini included the 2021 feature *Boiling Point*, shot in a single 90-minute take in the kitchen of a London restaurant. But the sprawling, chaotic canvas and raw emotion at the core of *Adolescence* made it very much its own thing. "It's a real social-realism piece, this," says Lewis, "and you're not going to make every moment shapely and painterly."

With all action occurring in real time, Episode 1 depicts police officers' early-morning raid on the Miller home and their arrest and booking of Jamie (Owen Cooper); Episode 2, set the next day, follows investigating officers Bascombe (Ashley Walters) and Frank (Faye Marsay) through the tumultuous warren of Jamie's high school as they search for evidence and information; Episode 3, set several months later, depicts Jamie's meeting with Briony (Erin Doherty), a psychologist assigned to assess him; and Episode 4, set roughly a year after Jamie's arrest, focuses on his parents, Eddie (Stephen Graham) and Manda (Christine Tremarco), and sister, Lisa (Amélie Pease), as they continue to contend with the impacts of his actions.

Lewis' overall lighting plan had to accommodate shooting 360 degrees in nearly every environment, and he would be moving through many of them at a rapid pace. (He shot the entire series with a DJI Ronin 4D-6K, which incorporated a Zenmuse x9 6K camera paired with a 32mm Cooke SP3 lens; see sidebar, page 48.) Working with gaffer Max Hodgkinson, he also sought ways to add nuance, underscore emotion and enhance character detail with near-invisible light. This fine-tuning often began during the show's rigorous rehearsal process. "The second the cast are on set and start playing with the performance, little things change, and seeing the nuances of the performance come out is going to inspire your lighting as well," says Lewis. "It might be about sneaking a little kick in, putting an eyelight over there, or making sure the light's falling in a way that gives them freedom to lean back and forth. Watching the details of the performance is what made this process exciting. The whole thing's really about character anyway."

For every episode, the filmmakers spent one week blocking the camera and actors, with co-screenwriter Jack Thorne on hand to revise or add dialogue as needed; one week on tech rehearsals, an incremental process that culminated with a complete run-through on the last day; and then one week of shooting, with the episode/move filmed once in the morning and once in the afternoon each day. Going into rehearsals, the team had an overall plan for the camera's trajectory mapped out in Hollywood Camera Work's Shot Designer. "It had all of the camera positions, including every turn, every little movement, and all the character blocking as well," Lewis recalls. "The bulk of our prep was [creating] that, because then we at least knew how we'd connect all the beats." Prior to rehearsals, Barantini, Lewis and script supervisor Carley Armstrong also timed out some sections of the script on location, especially at the school where Episode 2 takes place.

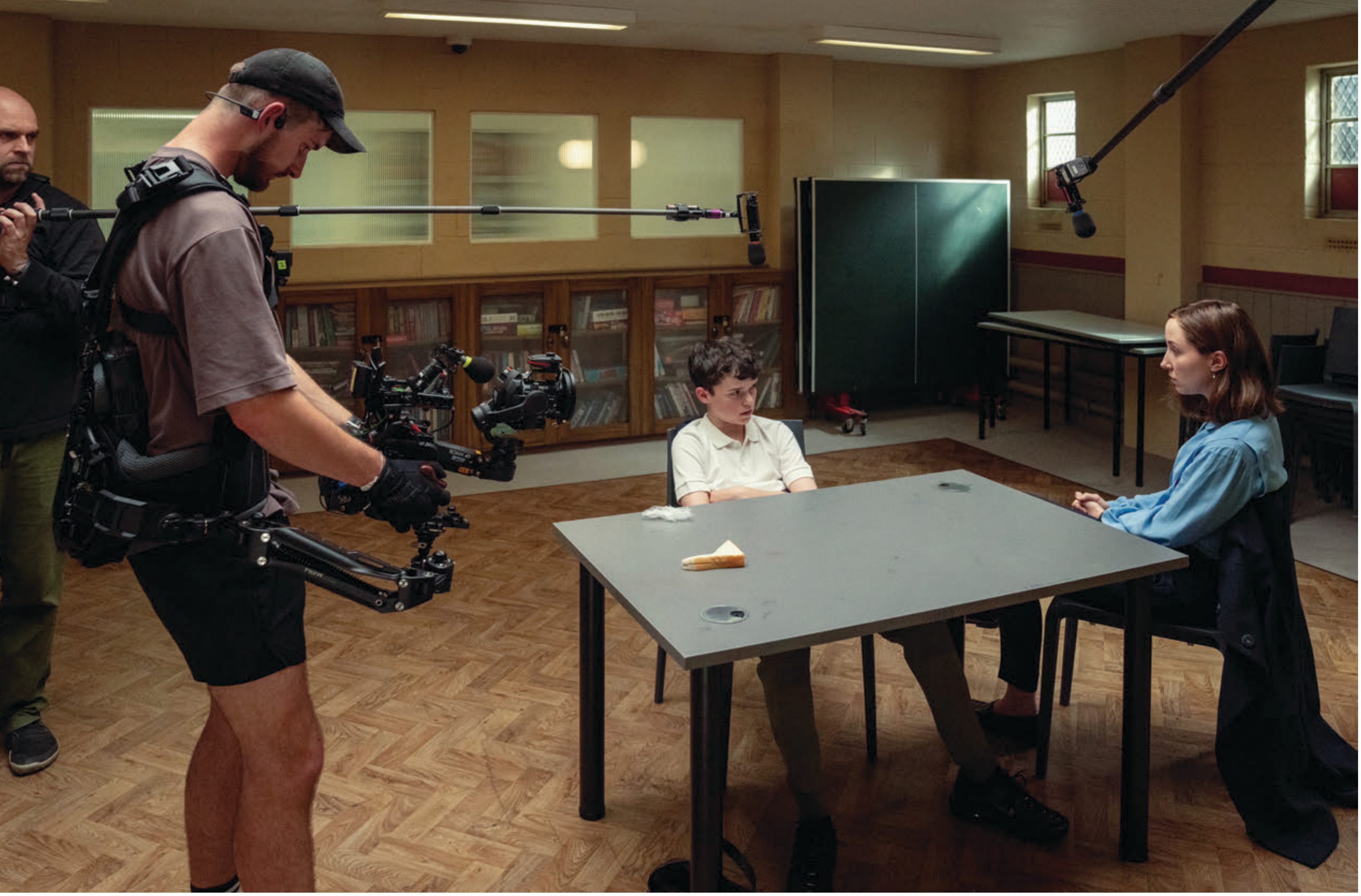
A Yorkshire Shoot

The production filmed on location and onstage in South Kirkby, West Yorkshire, where production designer Adam Tomlinson built two sets at Production Park: the police station for Episode 1 and the juvenile-detention facility for Episode 3. The sets shared a single stage, and Lewis and Hodgkinson developed a predominantly toplight plan to enable 360-degree moves throughout both sets. (See diagrams, page 45.) Fixtures were connected to a ChamSys MagicQ MQ250 lighting desk, and during the shoot, Martin Winton, Grum Leesmith and Olly Suckling rotated in to operate the desk as availability allowed. Hodgkinson adds, "Due to the live-performance nature of the show, the production ran two desks at all times so the backup could kick in if the primary desk were to crash."

In the police station, says Lewis, "We had loads of cues on the lighting desk [because] we'd change the levels as we moved around the room; since the light was over the actors, we'd bring it down to create a bit of under-eye shadow or to shape the face. So, as we moved around, all the lights were doing this sort of wave around the room very slowly.

Accused killer Jamie Miller (Owen Cooper) meets with psychologist Briony Ariston (Erin Doherty). Nearly the entirety of Episode 3 takes place in this one room. As with each episode of the season, this one was captured as a single continuous shot.

UNIT PHOTOGRAPHY BY BEN BLACKALL. PHOTOS AND FRAME CAPTURES COURTESY OF NETFLIX. LIGHTING DIAGRAMS COURTESY OF MAX HODGKINSON.



Cinematographer Matthew Lewis shot the series with DJI's Ronin 4D 6K, which integrates a four-axis gimbal with a Zenmuse X9 6K camera. The Tilta Float system was incorporated for certain moves and for all of Episode 3.

> **"The second the cast are on set and start playing with the performance, little things change, and seeing the nuances of the performance come out is going to inspire your lighting as well."**

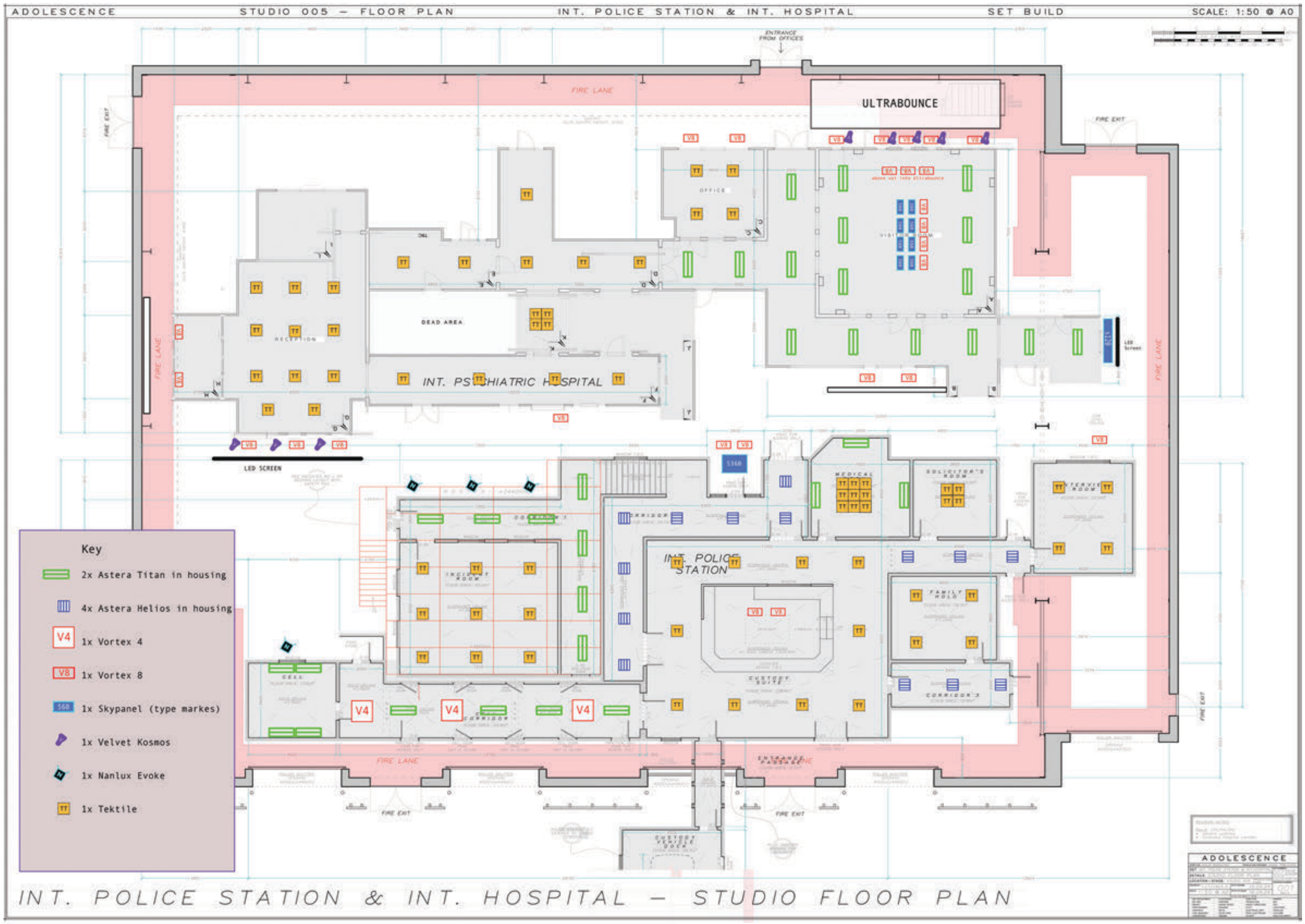
"We had to make sure to find the eyes, so a lot of [the detailing] was about that," the cinematographer adds. For an eyelight in the Family Hold area, where Jamie's family meets with a lawyer (Mark Stanley), Lewis hid an Astera HydraPanel behind a sheet of white A4 paper posted on a bulletin board behind the family. "Once that sign's out of frame as we come around onto the lawyer, we brought up the light to shine through the paper," he says. "That was a fun one."

Hodgkinson notes, "The eyelights were the only lights we had on faders to adjust in real time, as the moves changed each time and we needed to be able to fade them in and out quickly out of the cue stack. Being able to run the DMX over the power cable was crucial, as we didn't want to risk any CRMX failures or delays."

A Two-Hander

Episode 3 presented some novel creative opportunities because it is essentially a two-hander in one room, with both characters, Jamie and the psychologist, seated at a table most of the time. The shoot actually commenced with this episode partly because of its comparatively simple logistics. "We thought it would be quite a nice warmup to the others — very contained, small cast and crew," Lewis says somewhat wryly. "It became more of a creative challenge because of the nature of the episode. Once we got out there [for the other episodes], the creative part became more straightforward, and all the technical things compensated for that!"

In the Visitor Room where most of Episode 3 unfolds, Tomlinson designed a practical skylight over the central table to motivate an overhead key, as well as four narrow windows at the back of the room. "We had the


ADOLESCENCE
STUDIO 005 – FLOOR PLAN
INT. POLICE STATION & INT. HOSPITAL
SET BUILD
SCALE: 1:50 @ A0
ULTRABOUNCE
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DEAD AREA
RECEPTION
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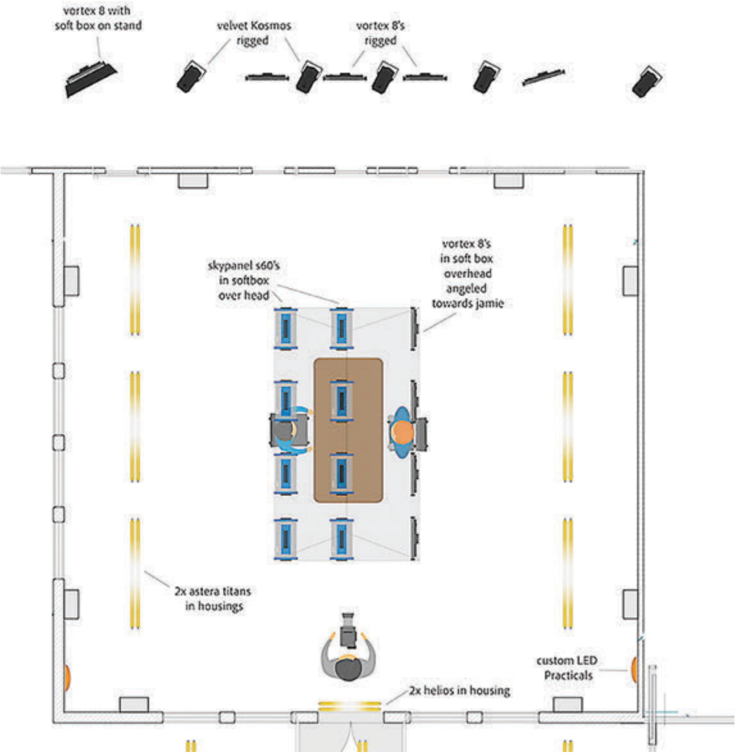
INT. PSYCHIATRIC HOSPITAL
LED SCREEN
MEDICAL
SOLICITOR'S ROOM
INTERVIEW ROOM
INT. POLICE STATION
CORRIDOR
FAMILY HOLD
CUSTODY SUITE
CORRIDOR 3
CELL
ENTRANCE PASSAGE
Key
🟩 2x Astera Titan in housing
▥ 4x Astera Helios in housing
V4 1x Vortex 4
V8 1x Vortex 8
S60 1x Skypanel (type markes)
1x Velvet Kosmos
1x Nanlux Evoke
TT 1x Tektile
INT. POLICE STATION & INT. HOSPITAL – STUDIO FLOOR PLAN
ADOLESCENCE

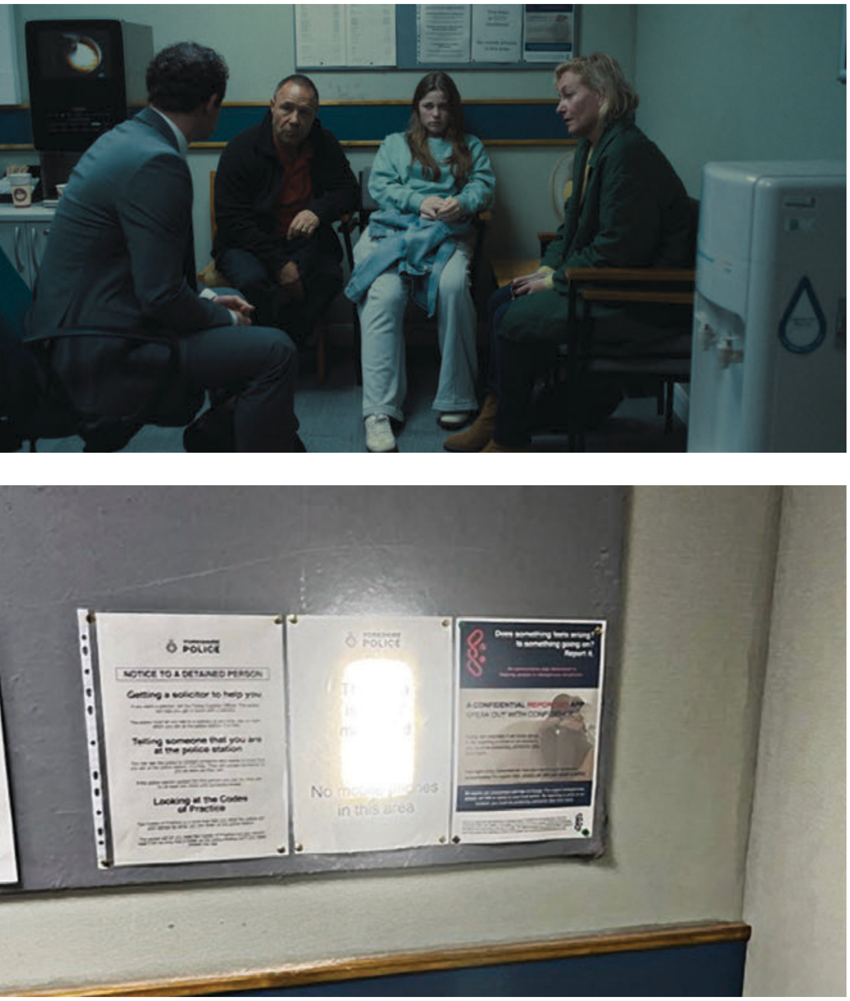
Above: A diagram of the production's full soundstage. Right: A schematic of the Visitor Room where Episode 3 plays out.

skylight built straight away because the two boom ops and I would be circling the actors the whole time, so we couldn't key from the windows at the back or we would have all been casting shadows," Lewis explains.

As the set was being built, Barantini, Lewis and Hodgkinson considered how they might add visual interest over the course of the episode, and the conversation quickly came to focus on using the skylight, which was lit with a mix of Creamsource Vortex8s and Arri SkyPanel S-60s through ¼ Grid, and the windows, which had Vortex8s and Velvet Kosmos pushing through, to suggest changing skies. (See diagram, at right.) Lewis recalls, "We'd all noticed that South Kirkby was a really windy place, with these perfect *Simpsons* clouds going by all the time, and we started to wonder if we should [mirror that] in the room — change the levels as if clouds were rolling through. We'd be seeing that weather all the time [in the other episodes], especially in Episode 2. So, the three of us looked at the script and played around with timing transitions with certain lines. What if it got dark when things took a dark turn? Too obvious?

"We kept doing camera tests and seeing the level and playing in a really gentle way," Lewis continues, "and what I realized is that you're so in it as an audience member because of the one-shot thing, you just believe


vortex 8 with soft box on stand
velvet Kosmos rigged
vortex 8's rigged
skypanel s60's in softbox over head
vortex 8's in soft box overhead angeled towards jamie
2x astera titans in housings
custom LED Practicals
2x helios in housing


POLICE
NOTICE TO A DETAINED PERSON
Getting a solicitor to help you
Telling someone that you are at the police station
Looking at the Codes of Practice
POLICE
No mobile phones in this area
A CONFIDENTIAL REPORTING APP

In Episode 1, Jamie's father, Eddie (Stephen Graham); sister, Lisa (Amélie Pease); and mother, Manda (Christine Tremarco) meet with a lawyer (Mark Stanley) in the Family Hold area of the police station. On the bulletin board, the second flyer from the right concealed an Astera HydraPanel unit, which was switched on to provide an eyelight once the camera turned away.

> **"[In rehearsals,] we'd do a section and review it, do a section and review it, over and over again. That's what a true oner gives you: precision and review."**

the reality you're presented with because there's no film magic going on — we're not creating meaning through cutting. It develops a weird trust, I think. So, we were able to push the darkness and the clouds quite a lot, as long as [the transition] came in over about 10 seconds. I think people feel it, but it's so intertwined with what's happening to the characters emotionally, and it happens so gently, it's just there." (The effect is augmented by sounds of intermittent rain.)

To program the lighting cues, "we'd essentially break down the take into a more conventional list of shots, create lighting scenes for each 'shot' throughout the episode, and transition through all of them," Hodgkinson says. "Some of the transitions worked straight away, and some needed to be fiddled with to make them feel more natural. For the split between sunny and overcast, we had a few different techniques. For sun, we'd play more from our overhead Vortex8s at 5,000K and S60-Cs at 5,600K, and outside the windows, we'd spot the Kosmos at around 4,800K and play the Vortex at around 5,300K. As we moved into our more overcast look, the Kosmos would flood and cool off to 5,600K and everything else would move to around 6,000K, with the Vortex8s overhead playing far less. We'd also slowly play more from the Astera Titans [dressed as practicals], as if your eyes were adjusting to the space."

Computers visible on a table in the background facilitated a well-camouflaged eyelight for Cooper: a HydraPanel embedded in a computer box beneath the table and angled toward the actor. "It fit perfectly where the computer's fan would have been, and when we're looking at Erin, it's turned off and you can't see it at all," says Lewis. "As we come around Erin, once the boom op on that side would clear, the light would come up very gently and give Owen this little dot in the eye — just enough to pick him out, especially in the overcast scenes."

"Hundreds of Decisions"

With each episode captured in a single shot, deciding when to move the camera was always a complex calculation — "the hundreds of decisions that go into that are the crux of this whole thing," says Lewis — but it was even more so for Episode 3, which lacks the physical action and variety of characters that motivate movement in other chapters. "Who we look at and at what time, how close we are, how the camera's moving and at what angle to the eyelines, how we get to a two-shot, how we get to a wide without pulling away and making it look like the end of the episode — all of that was on steroids in Episode 3, because any tiny move that wasn't motivated by the performance or didn't feel connected with the performance would have made you suddenly feel the presence of an operator making decisions," Lewis says.

Briony enters the Visitor Room twice, upon her arrival and then again after she has stepped out for a break at a volatile moment. Lewis continues, "Every time we come into the room, I stay in a two-shot to start with because that point in the scene is super awkward — an unknown. What's about to happen now? If I'd come in and immediately started moving, it would've felt like we knew what was going on, almost. It's only when the actors take a seat and start to have a little bit of conversation that we start moving, tentatively, and there's an uncertainty to it … we come around and I land 'round the other side in a two-shot back, and I stop there because it gets awkward again, basically, and if we didn't stop, we would have breezed past an emotional beat. The direction of rotation [around the actors] through the scene is the same until the dynamics change toward the end, and then we start to do a little bit of coming back the other way, like, 'something's different now.'

"The great sacrifice of a oner, especially when you've got two actors

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like this across from each other, is deciding who to be on and what you're saying by being on that person. Sometimes it may not be who you want to hear, but who you want to *see* hearing something. We'd come in on a close-up when it was the right person to be on at that time.

"Every conceivable thing, every tilt, every pan — everything was connected. What was slightly unnerving coming into Episode 3 was that a lot of the intense working out of all those things [didn't happen until] the rehearsals. We had an idea going into it, but we couldn't picture what

Capturing *Adolescence*

The mobile single takes of *Adolescence* required an agile, stabilized camera solution, and testing all the options led Lewis to choose DJI's Ronin 4D 6K, which integrates a four-axis gimbal with a Zenmuse X9 6K camera. "How the camera moved had to be the priority," he says. "The 4D's Zed-axis stabilization is brilliant and was really useful for the isolation of the up-and-down and all the running and quick handovers we did."

Lewis was the main operator, but Episodes 1, 2 and 4 literally cover a lot of ground and involved frequent handovers to operator Lee David Brown. "Sometimes it was for an interesting transition, or for a logistical reason like passing the camera over a desk or across a car. Lee also operated most of the foot chase in Episode 2 because I'd injured my knee. And sometimes a handover was purely for fatigue reasons; holding the camera out in front of you gets tiring really quickly and your forearms start to shake, so we'd aim to do handovers every five to seven minutes."

Lewis operates on foot for a scene featuring Eddie and Lisa (top) and aboard a rickshaw for a shot with Detectives Bascombe (Ashley Walters, left) and Frank (Faye Marsay).

For some moves — and throughout Episode 3, on which Lewis was the sole operator — the Tilta Float system was used to redistribute the 4D's weight and reduce operator fatigue.

Because the runtime of each episode could not be determined until rehearsals began, Lewis tested a variety of recording codecs. "The codec had to accommodate the length of the take, and we were limited by the capacity of the 1-terabyte card. 6K raw gave us about 65 minutes, which was potentially attainable, and ProRes 4:2:2 gave us an hour and 14 minutes, which was a real safety net.

"We essentially had two weeks of prelight, so we could really work out how to scoop a whole room up if we needed to. As long as we knew what our range was, 4:2:2 was doable. I had to convince Netflix of that because the Ronin 4D isn't one of their approved cameras, and they were really concerned — rightfully so — that we'd have loads of rolling shutter, no range out the windows and blown-out skies, and all the shadows would be lost.

"In the end, we shot everything in raw because once we were in rehearsals, all the episodes came in either around the hour mark or just under. We were looking at exposure all the way through."

Using the Tilta Mirage variable ND system, loader/"variable ND puller" Adam Farquharson remotely smoothed out exposure changes as the camera navigated disparate lighting conditions throughout Episodes 1, 2 and 4. "We stripped the Mirage matte box back to a clip-on and a single tray that held the ND. We set a range, practiced in different conditions and exposures, and brought the footage into the grade with [colorist] Dan Moran at Harbor [Picture Co.] to make sure we weren't losing information — in the highlights mainly, but occasionally in the shadows. We found the highlight retention in the DJI sensor was really good, and we tested to determine how to protect the shadows because once they went, they just went."

Lewis shot at the 4D's base ISO of 800 everywhere but in the police station, where he rated it at 1,000 "to scoop the whole set up a bit because we were basically running out of power. That meant we had to be more cautious to retain information in the shadows."

He is especially grateful he had as many as 10 days to grade each episode with Moran. "That was amazing and so, so needed. Thankfully, they brought me in really early in the budgeting phase and asked where I thought we'd need to make sure there was some room. I said, 'The grade and paint-outs.' Our post supervisor, Hannah Dunnell, was an absolute gem. She was in it to make the best possible [show], and she never stopped."

Among the final touches on *Adolescence* was the application of a Kodak Vision 2383 print emulation. "Because white for that film-print profile was influenced by the color of the clear film base, it leaned warmer than D65. It also rolled off the highlights so that the shoulder of the curve was soft. As an isolated component, Dan was able to manipulate that highlight behavior to serve the creative needs of the series."

— Rachael K. Bosley

Tech Specs: 2.00:1
Camera | DJI Ronin 4D 6K
Lens | Cooke SP3

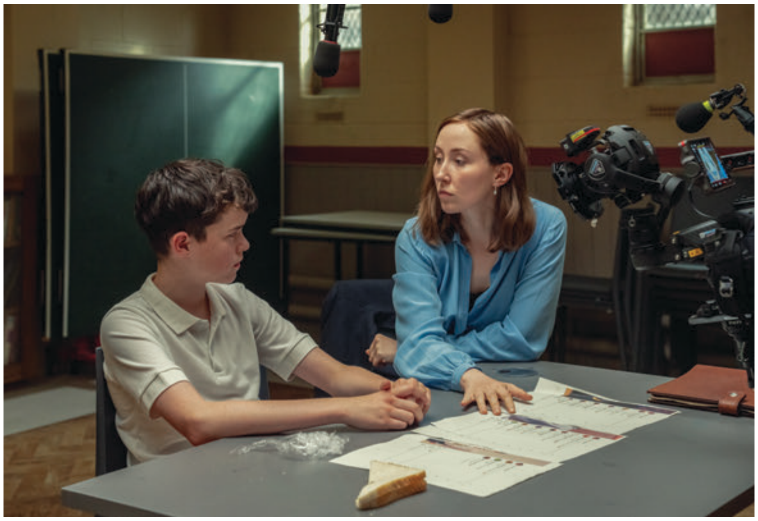
the performances would be like. So, all those little compositional choices all the way through, recognizing and dissecting what every choice was saying at all times, was a bit intense. [In rehearsals,] we'd do a section and review it, do a section and review it, over and over again. That's what a true oner gives you: precision and review. It presents some interesting luxuries, I think. It's a process more like a play, where you see a rehearsal, go away and come back and do it again, and you're always improving it slightly."

Watching rehearsals also inspired an unusual framing choice late in the episode, when Jamie becomes so angry he jumps up from the table and starts ranting and stalking around the room. "As he's running around, I stay on Erin and frame him to be almost like a circling shark sort of intruding on her frame, letting his head be cut off, or settling on something that makes sense for her but doesn't make sense for him. He's this sort of lurking shadow in the background."

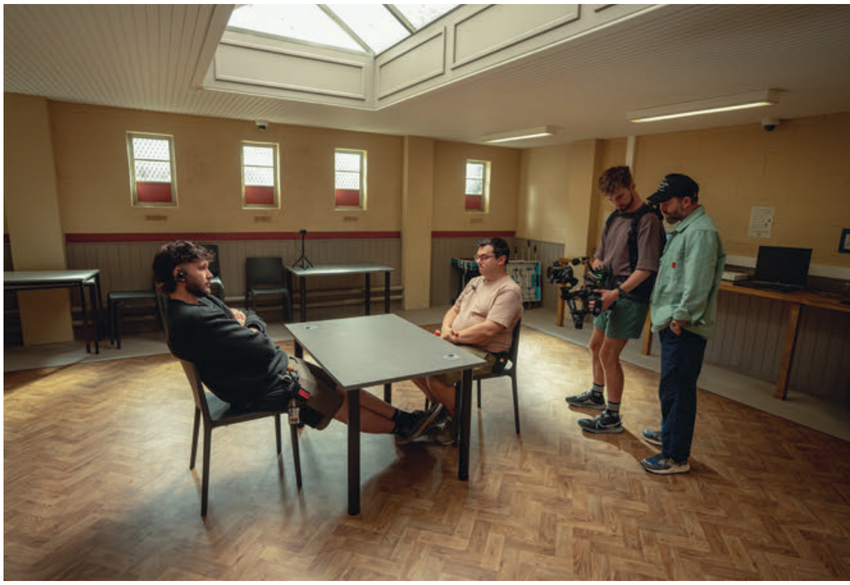
After a guard arrives and hauls Jamie out of the room, the boy bangs on the hallway windows as he's dragged away, still bellowing. The episode/take culminates with a resonant bit of synchronicity. "As he's banging on the glass, the camera lands on Erin, she produces a tear at the perfect moment, and then the sun comes out. Sensing it, she looks up, and you, the audience, can feel the sun as well. That [combination] happened for the first time maybe midweek [during filming], but toward the end of that week, every time it happened, I was getting goosebumps. I thought, this is so cool; it feels correct; it's serving the story. There's moments where we might have sacked off seeing the sun come out at the end, but we kept seeing it, and I thought, this is great.

"I rarely love my work when I see it … normally, I hate it for a couple of years, and then I look at it and I'm like, 'Well, that was all right.' But I'm actually really proud of that setup. What I really like about it is how intertwined the lighting is with the emotions of the scene."

Watch our Clubhouse Conversations interview with the cinematographer here:



Above: Capturing the continuing drama between Jamie and Briony. Below, from left: Key grip Pat Gillespie, loader Adam Farquharson, Lewis and director Philip Barantini shoot a test on the Visitor Room set.



Archenemies Tangle in *Daredevil: Born Again*

Cinematographers Hillary Fyfe Spera and Pedro Gómez Millán, AMC bring authentic New York City ambience to the series' epic showdown.

By Matt Mulcahey

A decade after *Daredevil* first appeared on Netflix, lawyer-by-day/vigilante-by-night Matt Murdock (Charlie Cox) and his crime-boss nemesis, Wilson Fisk (Vincent D'Onofrio), are back in the new Disney Plus series *Daredevil: Born Again*. Much has changed for the characters, and cinematographers Hillary Fyfe Spera and Pedro Gómez Millán, AMC sought to visually ground the series in New York City grit.

Shaken by a lapse in his strict moral code, Murdock has hung up his red-horned cowl to fight for justice exclusively in the courtroom. Fisk, aka Kingpin, has forsaken organized crime to become mayor of New York City. However, they can only subdue their darker selves for so long.

Spera, who set the look for the series while shooting seven of the first season's nine episodes (including the pilot) is currently at work on a second season. She says she sought inspiration for the show's look in such 1970s New York classics as *The French Connection* and *The Taking of Pelham 123* (both shot by Owen Roizman, ASC) *Taxi Driver* (Michael Chapman, ASC) *Mean Streets* (Kent L. Wakeford) *The Conversation* (Bill Butler,

UNIT STILLS BY GIOVANNI RUFINO. ALL IMAGES COURTESY OF MARVEL TELEVISION AND DISNEY PLUS.

ASC and Haskell Wexler, ASC), *The Friends of Eddie Coyle* (Victor J. Kemper, ASC) and a pair of films shot by Gordon Willis, ASC: *The Godfather* and *Klute*. She points to an assassination in a near-empty Italian restaurant — an especially memorable sequence from *The Godfather* — as an example of the Willis influence: "Fisk is inside a restaurant, eating, with his back to the action and his assassin approaching from behind, but [a crony] gets the gunman first — Fisk doesn't even turn around. The sequence is lit with golden toplight; you can't get more *Godfather* than that. It was fun to be really overt with some of those references."

She adds, "I'm motivated by human stories — stories about people.

Attorney Matt Murdock (Charlie Cox, opposite page), who is blind, renews his efforts to thwart criminal mastermind Kingpin, aka Wilson Fisk (Vincent D'Onofrio, above). Below: Murdock outfitted as his vigilante alter ego, Daredevil.

Top: Kingpin surveys the New York City skyline after being elected mayor. Above: Cinematographer Hillary Fyfe Spera, who was selected as an *AC* Rising Star in 2021.

Those films from the 1970s are very much that, and they've always been my largest inspiration. When I was initially read the scripts for *Born Again*, I immediately thought of the 1970s' New York films as perfect references for the stories. Daredevil is a grounded, street-level superhero; he is human, and so is Wilson Fisk. The city is a character, and these stories are about New Yorkers. We have to visually embody that distinctive spirit, grit and realness — the rebellion of living in this city."

Adjusting to a New Course

When the WGA strike shut down production in June 2023, the show had six original episodes in the can; Spera had shot four, Millán two. After the strike, the show underwent a creative overhaul; scripts for the remaining first-season episodes were jettisoned, and three new ones were written. Dario Scardapane came on as the new showrunner. The directing team of Aaron Moorhead and Justin Benson — Marvel vets from *Loki* and *Moon Knight* — were brought onboard to helm the rest of the series.

Spera served as director of photography on the new shows, which became Episodes 1 (a new pilot), 8 and 9, while Millán, who had shot Episodes 4 and 5 prior to the strike, worked on reshoots and additional material. Second-unit work was shot by cinematographers Ari Issler (pre-strike) and Joe Collins (post-strike).

"The strike was such a difficult time for all of us in the filmmaking business," says Spera. "I am infinitely thankful that we were able to return to complete the show, as so much care and passion was rolled up into the project. The ability to evolve the show even further with insight after the strike hiatus was a rare opportunity that I have never experienced and likely never will again."

Though the post-strike story arc shifted back toward *Daredevil*'s Netflix origins, the series largely stayed true to Spera's initial visual strategies for *Born Again*, which included shooting with the Arri Alexa 35 and an expansive lens package dominated by Panavision anamorphic glass. "I've worked almost exclusively with Arri cameras for a long time, so using the Alexa, for me, was kind of a no-brainer," she says. "We

considered the LF, but the problem we all ran into is that you had to use large-format glass. Going with the Alexa 35 enabled us to use all the lenses I'm so familiar with and love so much, especially those of a vintage variety."

Panavision's G Series, customized for the show, were the main lenses. The E Series, particularly the 135mm, was also a favorite. Spera explains, "I have some personal vendettas against certain lengths I don't naturally gravitate to, but the E Series 135mm is just a sweet spot for me. It's a beautiful lens. I've used it on four projects in a row, and it's a go-to whenever I'm shooting anamorphic. The E Series look complemented the tuning on our Gs very well, especially when we needed primes longer than 100mm, where the G Series ends."

The lens package also included Panavision's T Series (customized to match G Series tuning), H Series, Panaspeeds, Super and Ultra Speeds, Panavision Macro Anamorphic Primes, and several zooms: Panavision's 37-85mm AWZ2.3, 75-210mm ATZ2 and ALZ11 48-550mm, as well as an Angénieux Optimo Ultra 36-435mm. A pair of Pathé lenses with impressionistic distortion on the edges rounded out the offerings.

A-camera 1st AC Alex Worster offers, "I can't stress enough how much the business, rental and optics teams at Panavision New York and Woodland Hills had our backs on this one. We had close to 60 lenses on the main unit alone and were constantly spinning up 2nd units or tandem units or splintering off cameras. There were so many lenses and cameras moving around at any given time, and we couldn't have done it without Panavision's support and commitment to the project."

Unique Perspective

The Pathé lenses were originally made by Panavision's Special Optics team for cinematographer David Lanzenberg, ASC on the Netflix series *Chilling Adventures of Sabrina*. The glass earned its moniker because the imaging characteristics were inspired by the Goerz lenses used with a Pathé camera on *There Will Be Blood*. Spera explains how these lenses were applied: "The Pathés were discovered and tested during our camera

Top: Kingpin and his cronies convene at a port, where the mayor reveals his big plans for the Big Apple. Above: Cinematographer Pedro Gómez Millán, AMC.

tests for the original pilot, and they became part of the show's main look and package. They were meant to be used as part of our 'sensory language' — adding specific, finer points to moments of disorientation in Daredevil's perception experience."

Spera employed two different methods for similar sequences. The simpler approach featured a G Series 40mm shot wide open at T2.6 with +1 and +2 diopters, depending on the shot. She elaborates, "We used the diopters combined with the G40 to allow for closer critical focus, while maintaining the width of the lens — ultimately allowing the camera to get closer to the actors during camera moves. I discovered and fell in love with the G40's specific and unique flare pattern during lens testing in prep for the pilot, and we felt it was a great match for the sensory language. The color-chip-type flare pattern of this lens felt reminiscent of waveforms or echolocation patterns. I felt it important to prioritize the preservation of this unique flare pattern and the wide-close ability of the G40 through using diopters instead of going to longer lenses for this language. The goal was to do a simpler, grounded effect that was totally analog and in-camera, using no VFX."

Above: A year after his friend Foggy Nelson's death, Murdock contemplates a city in peril. Pictured here: Following a trial, Murdock has a difficult conversation with Karen Page (Deborah Ann Woll) about their relationship.

The Punisher (aka Frank Castle, played by Jon Bernthal) and Daredevil confer in the aftermath of a vicious battle with rogue cops.

Spotlight on Lighting | Penthouse Peril

In a memorable fight scene shot for the season finale, Daredevil and the Punisher (Jon Bernthal) team up to battle a squadron of flashlight-wielding rogue cops in Murdock's penthouse apartment. To complicate matters, the melee unfolds during a city-wide blackout.

"Murdock's apartment was a set build that had a city drop for both night and day work done there previously," says Spera. "Matthew Staples and the grip team, in tandem with the art department, physically blacked out buildings on that drop with black paper tape so we could light the skyline but not have the building windows appear lit. It was certainly an arduous process and a big effort, but one that paid off. Specifically, that strategy gave us the freedom to shoot the windows practically without the use of bluescreen, which allowed us to do interactive lighting without hindering VFX."

The set was lit for 360 degrees, with most of the sources either pushed through windows, mounted in the ceiling to provide a low ambient level, or carried by the actors. "We couldn't change the white walls of the set — which were not ideal on a set where we were trying to maintain darkness for a scene that takes place during a blackout — so we embraced them as practical bounces," says Spera. "The gun flashlights were also critical sources; we put ND.6 on them, and I asked the stunt performers for a little assistance: 'It would definitely help us if you pointed your guns over there a couple of times.'"

Because the Punisher's choreography was shot at 72 fps and Daredevil's at 24 fps, the lighting needed to be quickly adjustable. "We had to move between the two levels of exposure without having to do a significant relight," Spera says. "It had to be something we did on the [lighting] board and with ND on the camera. With everything being dialed up and dialed down, it looked sort of like a disco if you were watching from the outside!"

A helicopter-searchlight gag was included to add a moving, hard source. "[Gaffer] Charlie [Grubbs] asked us to give him the ability to go from one end of the apartment to the other," key grip Matthew Staples recalls. "We went simple and gave him track and a doorway dolly that was big enough to fit his stand with a moving light."

Movers — typically Elation Proteus Maximus and Chauvet Maverick units — figured prominently in the show's overall aesthetic. "We used them for their versatility in color, gobos and remote focusing, and their native color became a part of our palette as well for headlight sources," says Grubbs. "For timing beats, we would often manually operate the movers to ensure exact timing on the fly. Our lighting-console programmer, Ryan Phillips, built a Macro box so our lamp ops could reset their own units."

Spera adds, "Ryan was an integral part of our lighting approach and the storytelling aspect of the show. He was like the conductor of a symphony. Ryan would watch a monitor and unite the choreography of lighting cues to the camera movement or action of the scene. His ability to use interactive light became part of the show's look in such a distinctive way."

To heighten the effect, she would over-crank at either 36 or 48 fps with a 180-degree shutter and sprinkle in lens flares. The more complicated version — dubbed the "Sensory Grande" and used for moments when Murdock homes in on specific sounds — featured a three-camera setup, a dolly/zoom and an aspect-ratio shift. Spera explains, "The effect would start at our show ratio of 2.39:1, widen and expand to full frame 16:9 within the dolly/zoom, and then condense down again to 2.76:1 during the remainder of the zoom."

This was achieved with a bespoke camera rig created by key grip Matthew Staples. The center camera sported an Angénieux Optimo Ultra 12x 36-435mm for the dolly/zoom component; the flanking cameras were set back from the center camera on the plate and outfitted with wide-focal-length Panaspeeds to capture plates that were stitched together in VFX with the dolly/zoom to create a 270-degree panoramic field of view.

This page and opposite: A creative use of lens flare is a key element of the show's aesthetic.

The Sensory Grande rig required so much time and space that it was used for just two pivotal moments: once in an Episode 1 flashback sequence, and in Episode 8 when Daredevil senses the presence of the villainous Bullseye at a formal ball.

Opposing Aesthetics

Even when Murdock isn't flexing his extrasensory gifts, the aesthetic of his world is diametrically opposed to Fisk's. Murdock's universe features warmer light and looser, often handheld camerawork, while Fisk's favors symmetrical, centered compositions; a locked-down, low-angle camera position; and stark-white light.

"For Murdock, we tended toward longer primes with diopters," Spera says. "The G Series 60 and 75mm were frequent lengths for his world. We used the G 40mm as well, also with diopters. Our use of lenses with Murdock had a more human or grounded feel than what we did with Fisk."

Red light is a recurring motif for Murdock, used sparingly at first as the character wrestles with the alter ego that haunts him to return to his identity as Daredevil. "We used Lee 106 Primary Red on tungsten as our base and built our red around that throughout all our units, including the Arri S series, Creamsource Vortex4s and 8s, ETC Lustr 2s and 3s and Astera products, as well as our [Elation Proteus Maximus] movers," says gaffer Charlie Grubbs, who

joined the team for the show's post-hiatus work. Grubbs adds that the filmmakers used matching gel colors on the LED sources, noting that the movers were more difficult to match since they were CYM rather than RGB.

For Fisk, the G Series 30mm and 35mm were the dominant lenses, with the camera often below the character's eyeline to emphasize his domineering physicality. "A low-angled, centered portrait was frequently part of his coverage," Spera says. "The rest of the room and other actors in the scene were often composed in relation to him, as if his position within the frame is the anchor. The coverage opposite him would often have a higher eyeline, with the camera looking down slightly to anyone he was speaking to. The goal was always to show his size: imposing and larger than life."

Fisk's world called for harder sources, including Molebeams, which were added to the package when Grubbs came aboard. Spera says, "When Charlie brought in those Molebeams, it changed everything. We immediately got punchier, harder and bolder. He brought an infinite amount to the table in terms of visually elevating the look of the show and aiding in the expression of so many of our visual themes. I've immensely enjoyed our collaboration in terms of both working practice and storytelling perspective, and I'm so grateful to have him as a partner in the vision. His contributions have been immeasurable, and his work has become a huge part of the show's visual DNA."

4-Minute Oner

Spera's camera department comprised longtime teammates, including Worster; DIT Patrick Cecilian; B-camera 1st AC Chris Wiezorek; 2nd ACs Yale Gropman and Anjela Coviaux; and camera operators Tom Schnaidt, Blake Johnson and Andrew Juhl. "Some of us go back almost 15 years," Spera notes. "A few of my former ACs had bumped up to operating around the time of this show, and it was really exciting to be able to keep the camera family together and evolving. This show was a great adventure, and I'm especially proud of the crew's massive efforts and dedication to execute such an ambitious vision, as well as their ability to overcome so many challenges — both creative and logistical.

"We were privileged to have Marvel's trust to push the envelope visually, as far and as often as we could — which was an extremely rare opportunity. Very seldom in this industry does one get that kind of invitation. They said, 'We'll let you know when you've gone too far.'"

"We were privileged to have Marvel's trust to push the envelope visually, as far and as often as we could — which was an extremely rare opportunity. Charlie recalls a moment in prep when Justin and Aaron encouraged the team to feel confident to take our visual exploration to every extreme. We were thrilled to have the freedom to push our work to support the collective vision ever further — the sky was the limit, and the best ideas won. Very seldom in this industry does one get that kind of invitation. They said, 'We'll let you know when you've gone too far.'"

The collaboration was crucial in pulling off the four-minute oner in Episode 1. The shot was stitched together from four pieces, all done on a G Series 40mm. The action begins inside Josie's Bar (shot at a practical location in Brooklyn) as Daredevil and Bullseye (Wilson Bethel) crash through the bar's front window. The Steadicam, operated by Schnaidt, then ventures outside to the street to view the carnage before traveling back inside to pick up the continuing fisticuffs.

"The night exteriors were a combination of 20K tungsten units with

Fisk surveys his wardrobe and later meets with his wife, Vanessa (Ayelet Zurer), for a celebratory dinner.

Lee 651 Hi Sodium and a Vortex8 Moonbox with a cooler ambience, all on lighting lifts," Grubbs says. "On the ground we used more tungsten as accents and the Elation Proteus Maximus movers as headlights." Vortex4s were also employed, dialed to 651 to support the sodium feel.

"For the interior," he adds, "we used Astera products such as Titans, for ambience, and AX5s and 9s as our hard sources on a grid that was built inside the practical location: a bar in Greenpoint, Brooklyn that's more than 100 years old."

The fight then heads into the stairwell connecting the bar to the apartments upstairs. This segment was filmed at the same practical location, but because the stairs weren't accessible by a doorway at the back of the bar, a transitional stitch was required. Once in the stairwell, the camera hopped to a Freefly Mōvi on an Easyrig because the Steadicam was too tall for the space. Spera explains, "The stairwell was an

Top: The serial killer Muse (Hunter Doohan) is dispatched after a bloody battle.
Above: Bullseye, aka Benjamin Poindexter (Wilson Bethel), reveals a hidden bullet during a medical procedure.

incredible physical challenge for shooting — tight and small, with very steep stairs and neighbors actively living in the building and using the hallways. It was as real as shooting on location in New York City gets!"

Astera PixelBricks and Nyx bulbs illuminated the stairwell. Initially, Spera designed a gag where the light would flicker to complete darkness, but it didn't go quite as planned. She explains, "Our idea was that the lights would strobe and everything would go black for about a second, giving the movement sort of a frozen, staccato effect. But it was too dark for too long, and the actors got completely disoriented. We adjusted it so there was always some level of ambience — never complete darkness."

Once the brawl reaches the roof, another stitch takes us to a stage at Silvercup Studios, with the camera now on a 50' Technocrane with a Libra head. This section includes the final stitch as the camera tilts down for a bird's-eye view of a plate of the street below. "We had a standing

Above: Bullseye, disguised as a police officer, infiltrates the Black and White Ball, a gathering of top city figures. Below: Murdock is floored after taking a bullet.

rooftop set that we used for the season — it was rebuilt for different rooftops because nobody really loves shooting overnights on roofs in New York if they don't have to," says Spera.

Wall Street Challenge

Amid the show's creative retooling, the only pre-break episode that remained untouched was Millán's Episode 5, in which Murdock foils a bank robbery with the help of Yusuf Khan (Mohan Kapur). The Art Deco skyscraper at 20 Exchange Place in the Financial District served as the

Tech Specs: 2.39:1 (with 1.78:1 and 2.76:1 for "sensory effect")
Cameras | Arri Alexa 35
Lenses | Anamorphic: Panavision G Series, T Series, E Series, zooms, Macro Anamorphic Prime || Spherical: Panavision Panaspeed, H Series, Pathé; Angénieux Optimo Ultra

In a toplit homage to *The Godfather*, Kingpin calmly finishes his dinner after one of his cronies dispatches a would-be assassin.

practical location. The high rise is now home to luxury apartments and office space. "It sits right in the middle of Wall Street," Millán says. "On one side of the building, there's a very active lobby with residents and businesspeople going to offices, but then there's a back door that leads to an abandoned lobby. It's like a cave in there. On a sunny day, there's no direct sunlight even with those big, tall windows because it's surrounded by skyscrapers. During the scout, my meter was reading under a 0.7 at 800 ISO. I was like, 'There's nothing here!'"

The roads around Wall Street couldn't be closed, so the crew placed condors with 18Ks on the north side of the building to push sunlight through the windows. On the opposite side lived five cherry-pickers with Arri SkyPanel S360-Cs and M90s. With the lack of direct sunlight and short winter days, additional M90s were on standby to illuminate the surrounding buildings if the camera saw outside a window once Millán went into night-for-day mode.

For the interiors, the crew rigged two Vortex8s on each of the windows on the north side of the building to push more light in. Millán initially wanted additional units on the south side as well, but nixed that idea to limit the number of lights that would require paint-outs by the VFX team. "That setup allowed us to see basically 360 degrees most of the time in the lobby," says Millán.

When moving in for tighter coverage, Millán used a bounce card or show card to pick up light from the 18Ks, with negative fill on the opposite side to help shape the light: 12'x12' frames for wide shots and two 4x4 floppies for tighter angles. "If cast was standing a little too far away from the 18Ks, or if we needed to further shape the light around their faces, I would use a SkyPanel S60 through an 8-by-8 frame of muslin or [TRP] Magic Cloth with egg crates," he adds.

The action breaks free from the bank at the end of the episode as Murdock chases down the lead robber for a fight in a scaffolding-covered alleyway. Finding a suitable location proved difficult. Wall Street traffic made a company move impossible on the tight schedule, but then Millán remembered a scaffold-adorned alley that had caught his eye during a location scout. The problem was, he couldn't recall exactly where he'd seen it. "So, now the whole team is going around in circles searching for it," he recalls. "We finally found it, and it was only two blocks away from the bank, so we could just push the carts."

"This show was a great adventure, and I'm especially proud of the crew's massive efforts and dedication to execute such an ambitious vision, as well as their ability to overcome so many challenges — both creative and logistical."

Gaffer David Skutch, who worked on the pre-break portion of the shoot, placed an 18K on the street behind the action to create a silhouette. The alleyway opening behind the camera was blacked out, and an M40 was aimed into a 20'x20' frame of Ultrabounce for the desired ambience level. A pair of Lustrs were rigged to the scaffolding overhead, with a SkyPanel S30-C added on the ground for close-ups as needed.

In Memoriam

Bruce Logan, ASC (1946-2025)

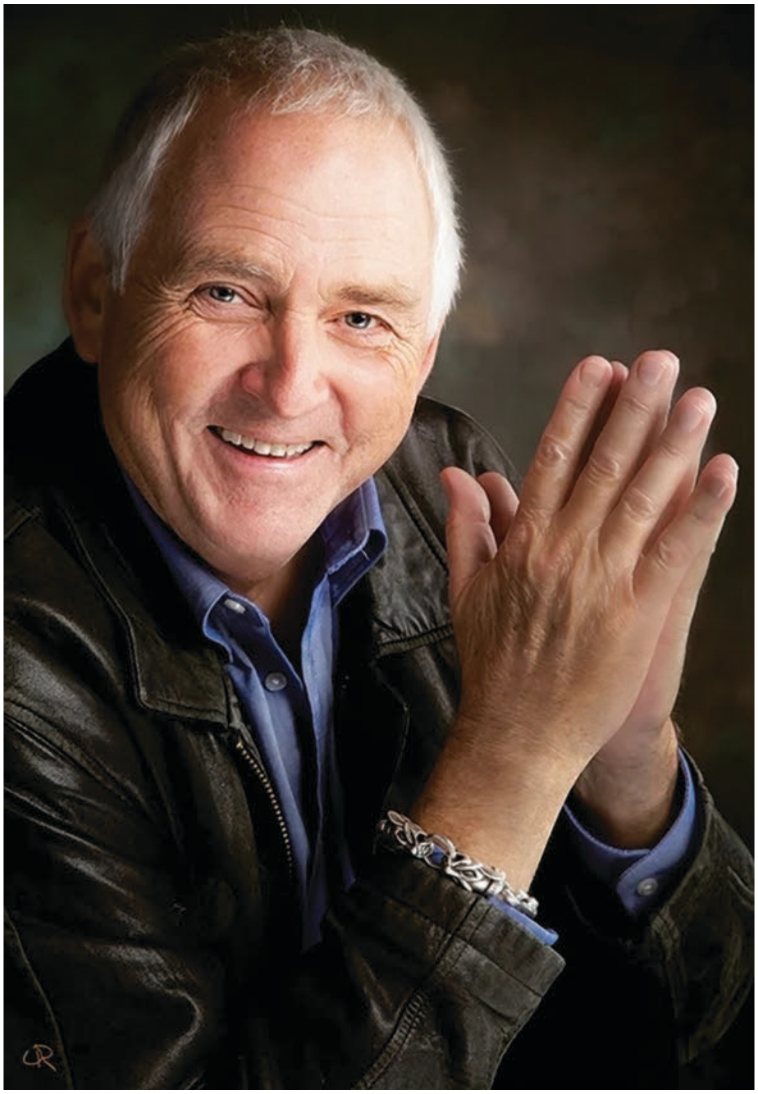


PHOTO COURTESY OF THE ASC ARCHIVE.

A portrait of Bruce Logan, ASC, photographed by Society member Owen Roizman in 2004.

Bruce Logan, ASC, a visual-effects expert renowned for his contributions to *2001: A Space Odyssey*, *Star Wars* and *Tron*, died April 10 at the age of 78.

Logan was born in Bushey Heath, England, on May 15, 1946. His father was a director for the BBC, and Bruce sparked to filmmaking at an early age. He began working in animation shortly after graduating from Merchant Taylors' School, and at 19, he joined the crew on Stanley Kubrick's *2001: A Space Odyssey*, collaborating with visual-effects supervisor Douglas Trumbull. His duties on the project included helping to create simulated computer graphics and readouts that were all done via traditional animation techniques and shot on 16mm film to then be rear-projected through prop video screens.

"My last job on the movie was to shoot the opening scene of the film with the main title," Logan recalled. "Stanley was a stickler for quality and didn't want any foreign country having a duplicate negative for the title in their language. So, I had to shoot the sequence seven times in the various different languages. The shot was 1,440 frames long, and it was five passes: the sun, the stars, the moon, the earth and the title. It took me a day for each shot and was a fitting end to my work on the movie."

Logan moved to the United States and transitioned to live-action cinematography. His feature credits included Peter Fonda's *Idaho Transfer* and several features for Roger Corman, including *Big Bad Mama*, *Crazy Mama* and *Jackson County Jail*. He then joined the visual-effects team working on *Star Wars*, collaborating with future ASC members John Dykstra, Richard Edlund and Dennis Muren. Among Logan's contributions was running the high-speed camera for the destruction of the Death Star, and he worked with pyrotechnics expert Joe Viskocil to devise the perfect angle: mounting the model on the ceiling and directing the lens straight up into it, creating a "zero-gravity" effect and an explosion that expanded in all directions.

"When you shoot an explosion conventionally, with the camera straight and level, with forces of gravity and atmospherics acting on it, what you get is a mushroom cloud that doesn't look like it's exploding in outer space," Logan later wrote for Zacuto.com. "By having the bomb explode directly overhead, it gives the illusion that there are no forces of gravity acting on the fireball, i.e., it's in outer space!"

On the sci-fi classic *Tron*, Logan shot live-action elements on 65mm that would later be combined with optical effects and animation, then mixed with pioneering CG effects to render a unique fantasy realm. "As director of photography on *Tron*, I pulled heavily on my experience in animation and visual effects," he noted. "In fact, every frame of film that I shot on that movie was duplicated onto Kodalith film, [and each] was used as an animation cel."

In a 2019 interview with *AC*, Logan observed that the field of visual effects "has always been about artistic content and the motion-picture camera process. I think of myself primarily as an artist, a cinematographer and a problem-solver. Those three aspects combined are the essence of visual effects."

Logan was a member of the Academy of Motion Picture Arts and Sciences and the Directors Guild of America.

He is survived by his wife, Mariana Campos-Logan, and daughter, Mary Grace Logan. His daughter noted on Instagram that her father was one of the "visionaries who lit the future by hand."

"I think of myself primarily as an artist, a cinematographer and a problem-solver."

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OptiTrack tracking cameras are mounted atop an LED wall on the set of *The Mandalorian* (*AC* Feb. '20).

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Camera Tracking for Virtual Production

By Noah Kadner

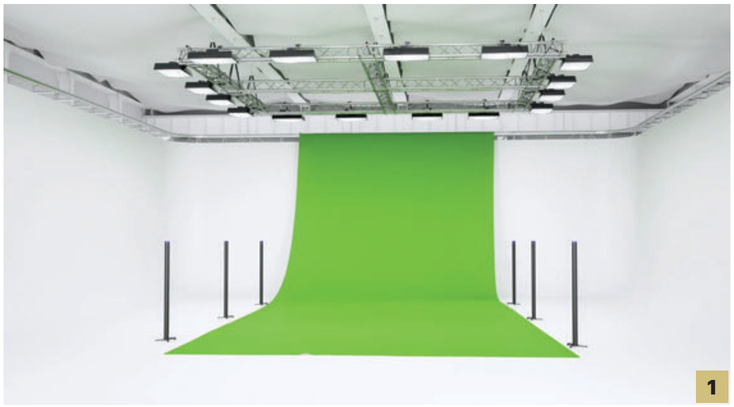
A key element in virtual production is camera tracking, which connects the actual movements of a physical camera to the proper visual perspective of the real-time rendering of virtual environments. The more precisely the camera's movements are tracked, the more credible the perspective of the virtual world looks. Without accurate tracking, parallax disappears, the perspective breaks, and the illusion of depth and realism expected from this type of render can vanish.

Generally, camera tracking communicates six degrees of freedom (6DoF): position in space (X, Y, Z) and orientation (roll, pitch, yaw).

Following is an overview of camera-tracking tools used for virtual production.

Outside-In Tracking

This refers to external cameras, typically capturing only infrared information, mounted around the volume that observe markers on the production camera, talent or props. The technique derives the production's camera position by comparing the perspectives of these multiple, overlapping witness cameras. Such systems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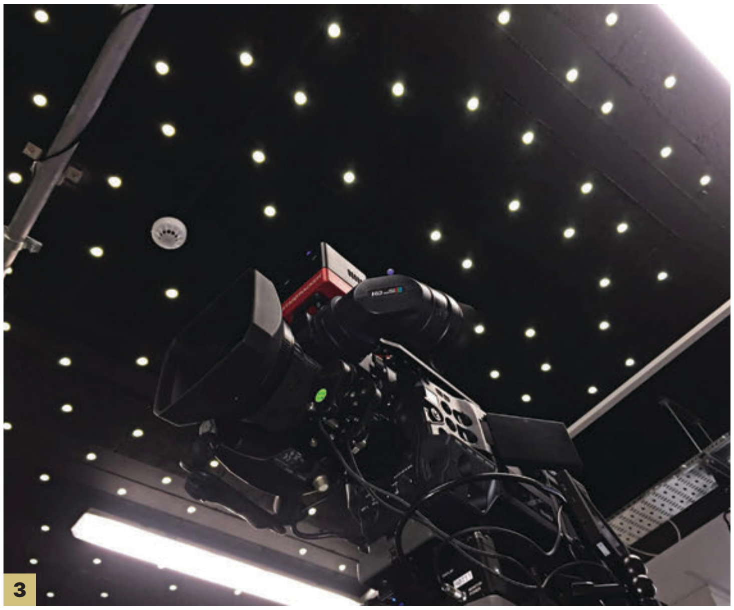
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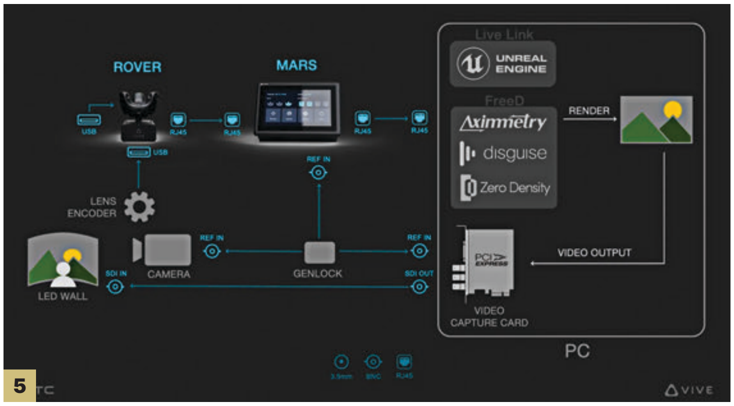
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Live Link
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disguise
Zero Density
RENDER
VIDEO OUTPUT
VIDEO CAPTURE CARD
PCI EXPRESS
PC
3.5mm
BNC
RJ45
VIVE

1. Antilatency's Pillar Tracking Area within a greenscreen environment. 2. Zeiss' CinCraft Scenario offers a full-manual calibration feature for spherical lenses, which also enables the creation of lens templates from scratch. 3. The Mo-Sys StarTracker's retro-reflective stickers (or "stars") are applied to the studio ceiling or lighting grid. 4. Vicon's Shōgun software specializes in tracking for motion capture. 5. A diagram of HTC's Vive Mars system in an in-camera VFX pipeline for an LED-wall production environment.

are known for their high accuracy, minimal latency and robustness when tracking multiple production cameras, performers and props simultaneously.

Vicon (vicon.com) has been in the motion-capture business since 1979 and is frequently used on stages that combine virtual production and motion capture. Its cameras include Valkyrie, Vanguard, Vero and Viper models, all aimed at different budgets and scales. Vicon's Shōgun software tracks motion with sub-millimeter precision and supports high-speed capture at low latency, making it suitable for complex scenes requiring interaction between digital and physical elements.

OptiTrack (optitrack.com) offers a modular approach to camera tracking, as with Vicon. OptiTrack's Prime and InSight series cameras can cover large volumes and integrate with Unreal Engine via the Motive software plugin.

Advanced Realtime Tracking (ar-tracking.com) is another solution frequently used in automotive visualization and live broadcasting.

Although outside-in solutions offer high-level performance and are often standard in large LED volumes, they tend to be more expensive than inside-out solutions.

Inside-Out Tracking

These systems mount a tracking camera directly onto the production camera. The tracking cameras emit infrared wavelengths and observe the reflectance of the IR off of reflective markers placed around the ceiling of the volume area, to discern the production's camera in 6DoF space — or use AI-powered "computer vision" to recognize patterns and features in the surrounding stage.

Stype RedSpy (stype.tv) is a popular system that uses infrared emitters and an IR camera to recognize a constellation of ceiling markers — i.e., reflective stickers placed strategically around the

Sony's Ocellus system, featuring a sensor unit mounted to the top, processing box behind, and lens encoder up front.

ceiling. The system is lightweight and is often used in live-television studios for its plug-and-play simplicity.

Mo-Sys StarTracker (mo-sys.com/products/startracker) is a similar solution, wherein IR emitters are mounted on a camera and reflective stickers are affixed to the ceiling in a pattern memorized by the tracker.

Zeiss CinCraft Scenario (cincraft.zeiss.com/us/cincraft-scenario) offers marker-based and markerless tracking, using Simultaneous Localization and Mapping (SLAM) to detect natural features or printed markers for added precision. It's designed to integrate directly with any Zeiss smart lenses incorporating Cooke /i or Zeiss' variation — eXtended Data (XD) metadata technology — providing real-time lens metadata such as focus, iris, zoom and distortion profiles.

Sony Ocellus (pro.sony/ue_US/products/camera-adaptors/ocellus) is a new offering that takes a markerless approach. Using SLAM technology, Ocellus detects corners, edges and other surface variations in the environment to build a 3D map in real time. Removing the need for physical markers makes it more attractive for rapidly changing setups. Ocellus is integrated into Sony's ecosystem, with custom support for the Venice camera.

TrackMen (2021.trackmen.de/products) offers a range of tracking systems, including marker-based, markerless and servo-based options. (For more on servo-based tracking, see the section to follow.) Its VioTrack R+ system uses natural features in the scene for SLAM-based tracking, while VioTrack S supports reflective markers.

Antilatency (antilatency.com/virtual-production) combines optical and inertial sensors with active infrared markers to deliver 6DoF tracking for cameras, props and talent. The system centers around the "Alt" (Antilatency Tracker), an optical-inertial unit with onboard image processing and compact size. Antilatency provides a wide array of powered LED emitter options, from ceiling pucks to truss mounts, as well as specialized floor tiles and standalone pillar cameras and emitters, to provide a customizable solution for a wide variety of applications, while supporting flexible studio layouts and integrating with Unreal for lens data and sync.

HTC's Vive Mars CamTrack (mars.vive.com) offers a simplified take on inside-out tracking with consumer-grade hardware; Vive wireless Trackers; and SteamVR compact, infrared base stations. CamTrack includes built-in genlock, timecode and FreeD tracking data output.

Inside-out tracking is generally less expensive than outside-in systems. However, each unit typically only tracks a single camera and can be less stable in larger volumes, requiring frequent recalibration.

Servo-Based Tracking

In this method, position and orientation are derived from encoders embedded in mechanical components. These units can be incorporated into cranes, dollies or jibs to track their movements, or into lens mechanisms — where they are known as FIZ encoders — to track focus, iris and zoom adjustments. Servo-based systems don't rely on optics or markers, but measure movement through direct mechanical feedback.

The crane/dolly/jib solutions can be highly effective for repeatable motion-control shots and fixed-rig work in virtual production, offering minimal cost and a simple setup. FIZ encoders can be used on their own or in combination with other tracking systems.

AI-Based Tracking

Using computer vision and machine learning, these systems can replace the need for markers or specialized hardware.

Move AI (move.ai), initially developed for markerless body-motion capture, has begun to explore camera tracking by analyzing live video feeds to determine camera motion. AI systems promise minimal setup time, though their accuracy and reliability are not yet on par with traditional methods.

Disguise (disguise.one) is experimenting with hybrid systems that combine AI with traditional sensors.

Lens Metadata

Virtual production requires accurate focal length/angle-of-view, focus, iris and zoom data to help blend virtual elements with real footage.

Cooke's /i Technology, **Zeiss' XD** and **Arri's Lens Data System** provide real-time lens metadata streams, which can be useful both during production and to help streamline visual effects in post.

Unreal Engine's Live Link and **Mo-Sys VP Pro** also allow camera metadata to drive digital camera representations in engine, giving cinematographers visual feedback on focus pulls and other lens adjustments.

Panavision | London Grip and Remote Systems

Panavision Grip and Remote Systems has moved its London operations to Unit 49, Bristol Road, Greenford, UB6 8UP.

The 25,149-square-foot facility represents a nearly 10,000-square-foot increase over the company's previous location and is close to Heathrow Airport, area studios and other Panavision group divisions. The facility includes three loading bays and electric-vehicle charging stations.

For more information, visit panavision.co.uk.

Sony Electronics | 50-150mm G Master

Sony Electronics Inc. has introduced the FE 50-150mm F2 GM telephoto zoom lens.

The latest addition to the G Master series has a floating-focusing system that enables a minimum focusing distance of 16" at the wide end and a maximum magnification of 0.20. Measuring 7 ⅞" long and weighing just under 3 pounds, the lens is suited to both handheld and gimbal use; its internal zoom design maintains its length and weight balance during focal-length changes.

For more information, visit electronics.sony.com.

Venus Optics | Laowa Zero-D Shift Lenses

Venus Optics has introduced two Laowa Zero-D Shift Cine lenses: 15mm (T4.8) and 20mm (T4.1).

Both lenses offer a ±11mm shift capability for full-frame sensors (±9mm for VistaVision sensors), helping users correct converging lines and maintain distortion-free architecture and interiors. The image circle is designed to be Ø65.2mm to accommodate the shift function.

Both lenses are designed with mounts including EF, RF, E, Z and L. The focus, aperture and shift rings are equipped with 0.8 mod gears, ensuring easy integration with follow-focus systems.

For more information, visit venuslens.net.

Lightbridge | Touchproof

Lightbridge has unveiled Touchproof Precision Reflectors.

Designed to minimize the need for on-set cleaning, the solutions are available in all sizes (from 7x7cm to 100x100cm) and in diffusion strengths from Diff0 to Diff3. Diff4's Super White finish remains unchanged.

For more information, visit thelightbridge.com.

Arri | Camera Companion

Arri has launched the Camera Companion app for iPhone, iPad and Mac with Apple Silicon, enabling users to configure their own interface for remote control of one or multiple Amira and Alexa (35, Mini LF, Mini and 265) cameras.

With a choice of two subscription options, Camera Companion's interface streamlines on-set workflows for camera crews. The Standard subscription provides comprehensive control of one or two cameras, and the Premium subscription adds features such as unlimited cameras and Midi support. A free demo version of the app offers basic single-camera control, camera-menu access, and free trials of both Standard and Premium.

For more information, visit arri.com.

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Samyang | AF 14-24mm FE Lens

LK Samyang has announced the AF 14-24mm *f*/2.8 FE lens for Sony full-frame E-mount cameras.

Co-developed with Schneider-Kreuznach, the lens has a minimum focusing distance of 7" and accommodates 77mm front filters. It measures 3½" long and weighs just under 1 pound. At 14mm, it offers a 114.2-degree angle of view, and at 24mm, the angle of view is 84.1 degrees. The lens is equipped with a USB port that enables firmware updates via a direct cable connection and also features weather sealing.

For more information, visit lksamyang.com.

Canon | 4 Solutions

Canon U.S.A. Inc. has unveiled the PowerShot V1 and EOS R50 V cameras and the RF-S14-30mm *f*/4-6.3 IS STM PZ and RF20mm *f*/1.4 L VCM lenses.

The PowerShot V1 features a 22.3-megapixel sensor, a grip designed for both normal and selfie shooting, an ultra-wide-angle zoom lens and Dual Pixel CMOS AF II for PowerShot. The EOS R50 V offers video-focused design elements such as a livestream button, a movie-recording button in the front of the camera, and a tripod screw hole for vertical shooting.

The RF-S14-30mm features a wide angle of view; cinema-style Auto Focus, and optical image stabilization. The RF20mm adds to Canon's RF Hybrid Prime series, designed for creators who switch between photo and video shooting.

For more information, visit usa.canon.com.

Viltrox | AF 35mm LAB FE Prime

Viltrox has released the AF 35mm *f*/1.2 LAB FE prime lens.

The lens features a patented Quad HyperVCM autofocus system, a minimum-focus distance of 13.4" and a 15-element optical system. A dedicated focus ring enables users to switch between stepped and stepless aperture control. When users pair it with the Viltrox Lens app, they can set button functions and LCD startup animations and monitor real-time parameters. The lens also features a 0.96" LCD display for quick access to critical settings.

For more information, visit viltrox.com.

Calibrite | Profiler 2.0

Calibrite has released Profiler 2.0, an update to its color-calibration software that features a new Camera-Calibration Module.

Featuring built-in presets for those new to color management and fully customizable features for more advanced users, Profiler 2.0 works with every Calibrite Display Device and Calibrite ColorChecker Target to deliver an end-to-end digital color workflow. The Camera-Calibration module automatically detects the reference target in any shot.

For more information, visit calibrite.com.

YoloLiv | YoloBox Extreme

YoloLiv has launched the YoloBox Extreme.

The live-streaming solution features eight HDMI inputs, two assignable HDMI outputs, an 11.2" OLED touchscreen (800-1,000 nits of brightness), 4K streaming, 4K ISO recording, a Qualcomm 8 Gen2 processor and up to 10 hours of battery power.

For more information, visit yololiv.com.

ETC | 4 Hogs, New OS

ETC has unveiled four Hog lighting-control consoles and announced v5 of its Hog software.

The Tour Hog features a 24" articulating display, dual 12.5" dashboard screens, motorized RGB-backlit keys, and faders. The Stage Hog offers the same power and front-panel controls as the Tour Hog, but without a monitor, allowing users to incorporate their own displays and other accessories. The Flex Hog is stripped of dashboard displays and keyboard drawer, offering a minimalist design and front-panel controls. The Gig Hog is designed to fit in a standard Peli case.

Hog v5 software will launch with the new consoles.

For more information, visit etcconnect.com.

Submit news, updates and releases to newproducts@ascmag.com

Chimera | Pro Series

Chimera has unveiled the Pro Series line of Lightbanks for use with Bowens-mount fixtures.

The range of eight designs/sizes is compatible with fixtures by Aputure, Amaran, Nanlux, Nanlite, Kelvin and Godox — and any other Bowens-mount fixture. Designed and hand-crafted in the United States using proprietary textiles, the Pro Series comes with a five-year warranty.

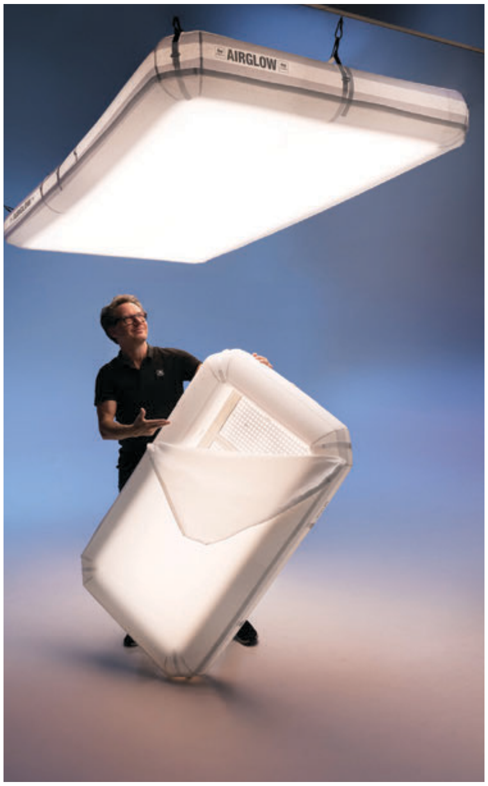
For more information, visit chimeralighting.com.

Codex | Device Manager 7.5

Codex has released Device Manager 7.5.

The update provides a unified MXF/HDE workflow for Arri Alexa Mini LF, Alexa 35 and Alexa 265 cameras. (Clients requiring HDE for Alexa Mini and Amira should remain on v7.4.4 for now.) Device Manager 7.5 delivers one MXF/HDE clip for every MXF/ArriRaw clip on the source media. Previous versions of Device Manager delivered an ARX file sequence plus WAV files for each clip.

For more information, visit codex.online.



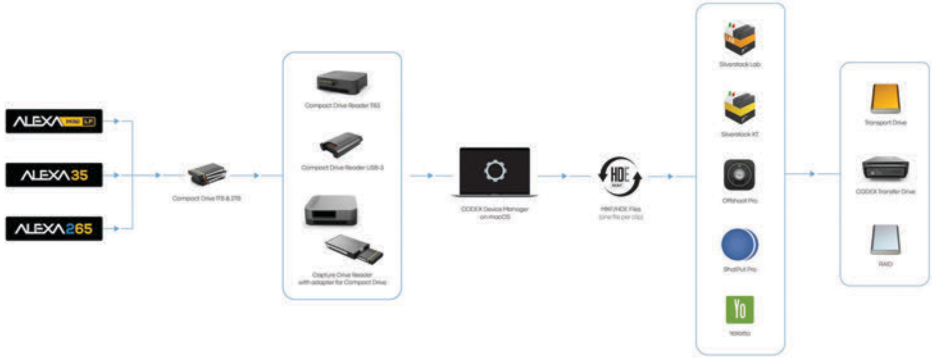
DoPChoice | Airglow Frame, Diva Lux4 Solutions

DoPChoice has announced the Airglow Frame, a light modifier tailored to work with flexible solutions such as LiteGear Bi-Color Plus and Spectrum LiteTiles.

With a 7" tube structure forming a rectangular 4'x2' or 8'x4' frame, the Airglow Frame can be attached via hook-and-loop and easily maneuvered into place to provide a soft, controlled source. The 4'x2' frame accommodates one row of Spectrum4, and the 8'x4' frame supports two rows of Spectrum8.

DoPChoice has also unveiled a Snapbag and Snapgrid for Kino Flo's Diva Lux4.

For more information, visit dopchoice.com.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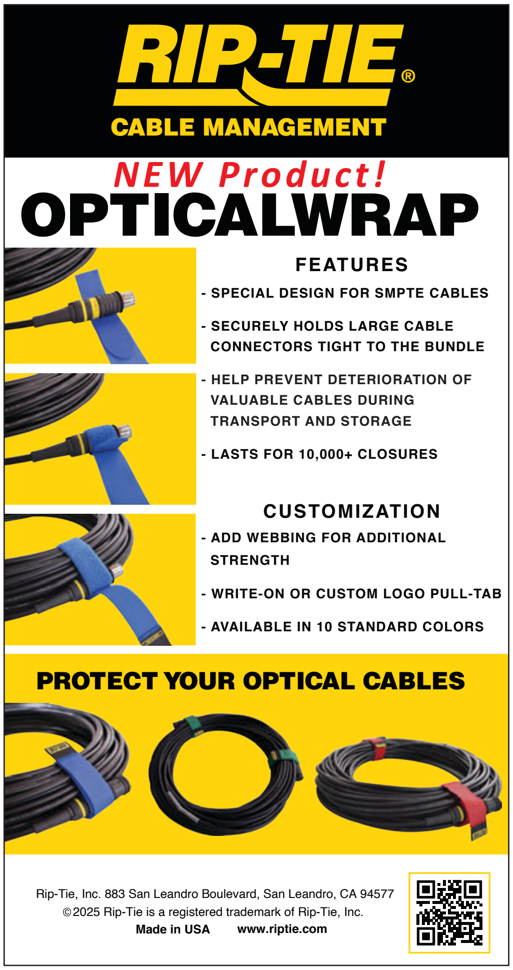
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City Theatrical | DMXcat Update

City Theatrical has released an update to the DMXcat app that includes the Flicker Finder function in the DMX Tester app when connected to the DMXcat-E test-tool device.

Flicker Finder enables users to find the source of any DMX flicker on the DMX universe by setting levels and noting if any levels have changed. Users can take a snapshot of the slot levels of an incoming universe and detect changes in those levels. Flicker Finder will continually monitor the snapshot taken against the new incoming data. If there are any changes to the slot levels, the app will notify the user.

For more information, visit citytheatrical.com.

DMXcat-E
CITY THEATRICAL

Zhiyun | Cinepeer Smooth 5E

Zhiyun has unveiled the Cinepeer Smooth 5E smartphone-camera gimbal.

The solution features an orthogonal three-axis structure and five shooting modes: Follow, Pan Follow, Lock, Vortex and Point of View. In any mode, users can tilt the gimbal down for low-angle shots. Primary controls are ergonomically placed for single-thumb operation. An integrated, high-CRI fill light provides up to 680 lux of brightness, and users can magnetically attach two additional lights to achieve up to 2,040 lux.

For more information, visit zhiyun-tech.com.

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Elation Lighting | Rebel Profile

Elation Lighting has released the Rebel Profile, the first in a new series of IP65-rated luminaires.

The solution features a 500-watt white LED engine and provides up to 22,000 lumens; it also offers CMY color mixing, variable CTO and a seven-position color wheel with high CRI (80/90) and UV options. Equipped with a rotating and fixed gobo wheel, full animation wheel, dual prisms, dual frosts and high-speed iris, the fixture offers users a range of dynamic effects. An advanced framing system allows for full-blackout shutter cuts, with a wide zoom range of 3.5-51 degrees for precise beam shaping and control.

For more information, visit elationlighting.com.

DJI | Mavic 4 Pro

DJI has released the Mavic 4 Pro, which introduces a gimbal capable of full 360-degree rotation and 70-degree upward shots.

The drone features a 100MP Hasselblad sensor and dual tele cameras housed in an Infinity Gimbal, a 51-minute maximum flight time, improved Omnidirectional Obstacle Sensing and 19-mile HD-video transmission. A triple-camera system with focal lengths of 28mm, 70mm and 168mm enables capture from wide-angle landscapes to telephoto close-ups. All three cameras offer Dual Native ISO Fusion.

For more information, visit dji.com.

Wooden Camera | Blackmagic Ursa Cine Solutions

Wooden Camera has launched solutions for Blackmagic Ursa Cine cameras that are compatible with the 12K and 17K models.

Users who do not want to use the camera's included B-mount plates will be able to add power and mounting with the 26V Gold Mount Plus D-Box and Wedge. The wedge mounts directly to the back of the camera and sets the camera's battery plate perpendicular to the camera. Further, ¼"-20 and ⅜"-16 mounting points are added to the top of the wedge to enable additional mounting for accessories.

Wooden Camera is offering two integrated systems, Core and Elite, as well as à-la-carte accessories.

For more information, visit woodencamera.com.

Profoto | Spot Small

Profoto has released the Spot Small light-shaping tool.

Designed for fashion, portrait, product and fine-art photography, the solution has a 115mm focus lens; integrated, adjustable leaves, and a magnetic front ring that adds compatibility with Profoto's Clic line. Optional accessories include the Iris and Gobo Holder.

The Spot Small works with both flat and protruded flash heads. A 360-degree, vented housing ensures reliable performance.

For more information, visit profoto.com.

Lynx Technik | Series 5000 Additions

Lynx Technik is expanding its Series 5000 platform with three new 12G-SDI cards.

The PVD 5400 O is a single-channel 12G-SDI frame synchronizer built for television broadcast. It supports up to 30 frames of video delay and re-embeds all audio channels after synchronization. The PDM 5248 UO DO and PDM 5348 O cards provide flexible audio embedding and de-embedding for digital (AES) and analog audio sources. Both modules support full audio processing per channel, an integrated audio mixer and up to 32 frames of audio delay.

For more information, visit lynx-technik.com.

Matthews | MicroGrip Master Rigging Kit

Matthews Studio Equipment has introduced the MicroGrip Master Rigging Kit, a compact solution designed for mounting lights, cameras and a range of accessories.

Included in the 148-piece kit are two styles of rigging plates to expand mounting options: the Standard MicroGrip Plate, which features multiple nail and screw holes, making it ideal for mounting into wood or building small rigs, and the MicroGrip Nail-On Plate, which includes a T cutout that fits between the plates of the MicroGrip Head, adding articulation and positioning flexibility.

For more information, visit msegrip.com.

IDX | A-HS30B

IDX System Technologies has released the A-HS30B B-Mount to B-Mount Hot-Swap Plate.

The solution powers the Arri Alexa 35 camera at 28.8V (22-33.6V), and when the B-Mount battery is removed, the output regulates 28V to the camera for hot swapping. 32Wh/3Ah battery cells inside and a 200-watt constant high load ensures two minutes for hot-swapping, with an LCD screen that displays countdown seconds when changing the battery.

When the user swaps out the depleted battery with one that is fully charged, it then recharges the hot-swap plate and resets the countdown to 120.

For more information, visit idxtek.com.

Rolux | DJI Ronin 4D Solution

Rolux has introduced a V-Mount Plate for the DJI Ronin 4D that enables users to power the camera/gimbal system with industry-standard 14V or 26V V-Mount batteries.

Weighing 9 ounces and measuring 5.2"x3.1"x0.3", the plate mounts to the 4D without requiring tools. A Lemo 6P 1B connector delivers direct power to the 4D, ensuring maximum performance even during demanding shoots. For optimal performance, Rolux recommends batteries rated to sustain at least 15A continuous current at 14.4V or 14.8V; this is especially important when the 4D's Z-axis system is active.

For more information, visit roluxbattery.com.

Wrap Shot

The Godfather

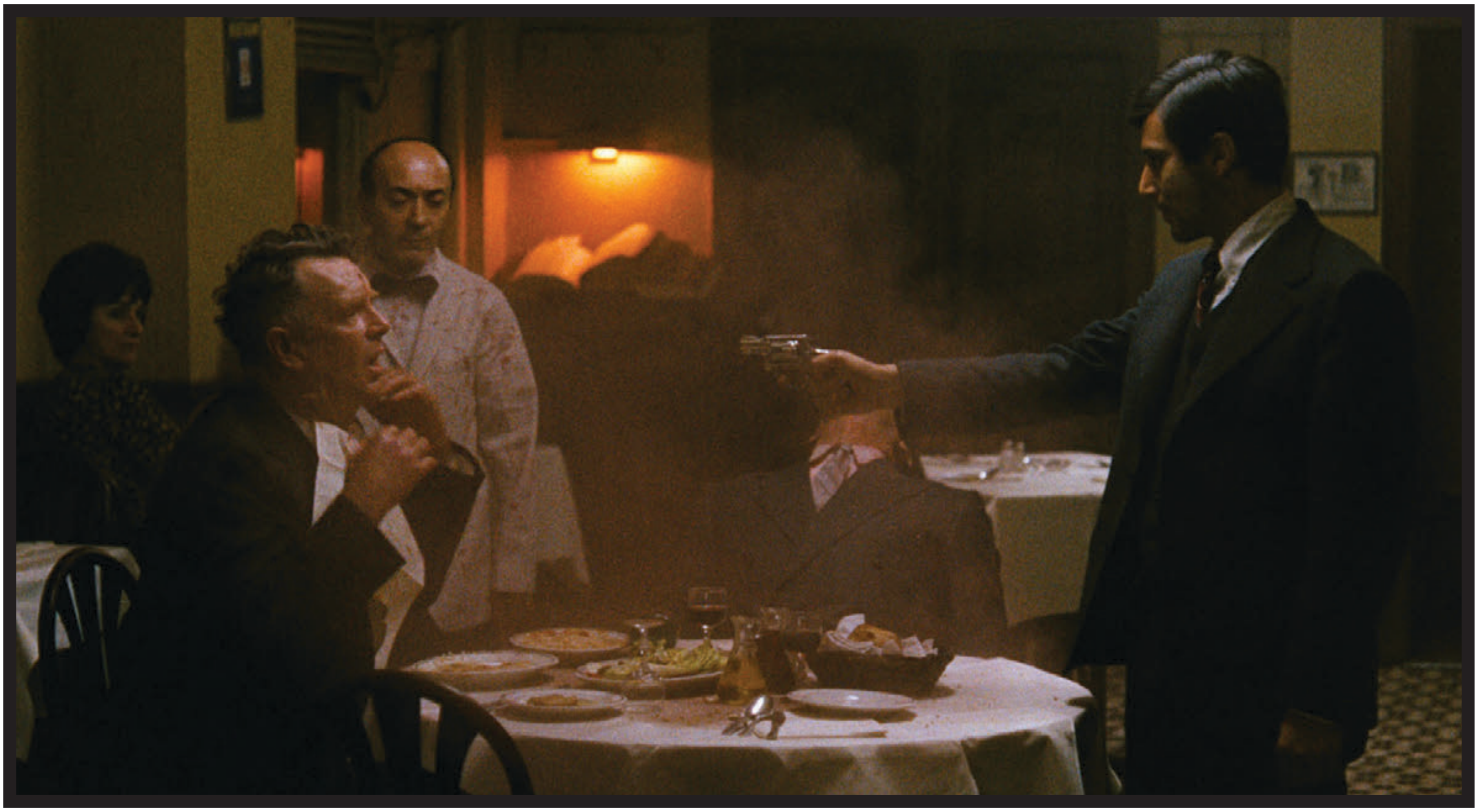

IMAGE COURTESY OF PARAMOUNT PICTURES.

In this month's coverage of *Daredevil: Born Again* (page 50), cinematographer Hillary Fyfe Spera notes that part of her aesthetic goal was to lend the series a gritty "New York City" vibe inspired by a number of classic films shot in the metropolis during the 1970s, including *The Godfather*. Spera says the show includes a direct homage to a famous sequence from Francis Ford Coppola's iconic 1972 motion picture, shot by Gordon Willis, ASC: The moment when Michael Corleone (Al Pacino) forever changes his life — and the trajectory of his entire family — by dutifully assassinating drug dealer Virgil "The Turk" Sollozzo (Al Lettieri) and NYC police captain Mark McCluskey (Sterling Hayden) in a near-empty Italian restaurant.

After a brief exchange of dialogue with his clan's enemies, Michael excuses himself to visit the bathroom, where he retrieves a carefully hidden gun. Returning to the table, he sits again before standing and dispatching both men. Despite Michael's prior insistence to his brother Sonny (James Caan) that this killing would be "business, not personal," the moment of truth brings him face to face with his victims, forcing him to confront the grim realities of his criminal conversion.

The scene's memorable ambience blends moody lighting — a Willis trademark — with evocative period production design by Dean Tavoularis and key contributions from sound-effects supervisor Walter Murch, makeup artist Dick Smith and special-effects experts A.D. Flowers and Joe Lombardi.

When Michael initially hesitates to pull out the gun and instead sits back down at the table, his growing stress is conveyed via gripping close-ups of Pacino and the screeching sound of an elevated train turning a corner outside the restaurant. In an essay penned for filmsound.org ("Stretching Sound to Help the Mind See"), Murch writes, "The metallic scream works as a clue to the state of Michael's mind at the moment — the critical moment before he commits his first murder and his life turns an irrevocable corner."

Willis noted that the executions of McCluskey and Sollozzo required some equally ingenious work by Smith, Flowers and Lombardi. To simulate the bullet hit on McCluskey's forehead, Smith created a makeup appliance that combined latex, Karo-syrup blood and a miniature explosive charge known as a squib. To kill off Lettieri, whose head wound would only appear onscreen for an instant, Flowers and Lombardi employed the more traditional technique of firing a wax bullet at the actor. However, the duo also added an additional effect inspired by a passage in Mario Puzo's novel. Willis recalls, "In the book, there's a mention of this red vapor hanging in the air after the shootings, so we tried to create that effect for the movie. The guys initially tried a couple of different methods before they found the one that worked, which involved packing red powder into an air tube that ran up the back of Letteri's head. The powder was dry, so it hung in the air."

— Stephen Pizzello

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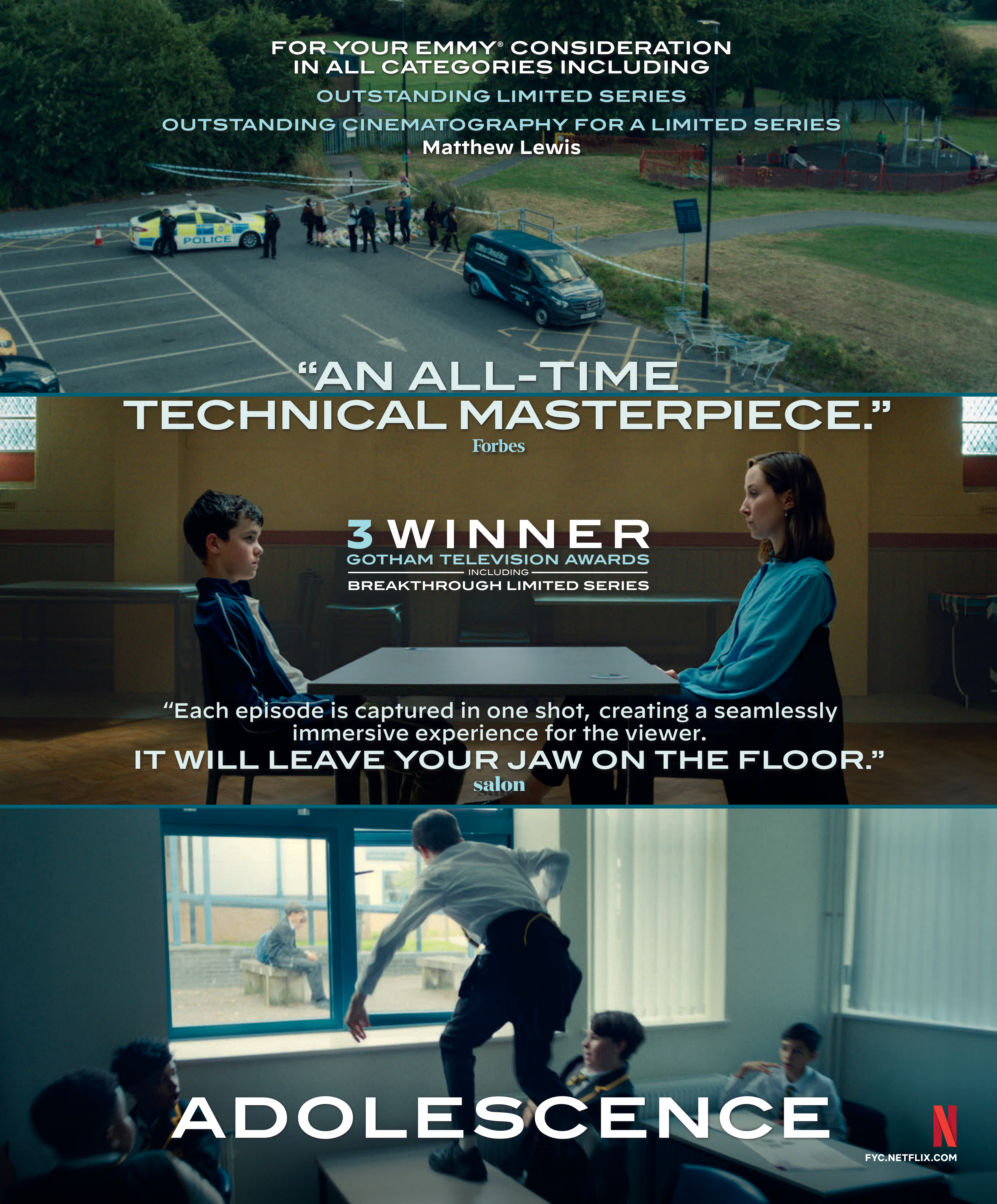

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